LECTURES

ON

THE PRINCIPLES AND PRACTICE

OF

SURGERY.

BY

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Eighth Edition.

LONDON:

EDWARD PORTWINE, 124, ALDERSGATE STREET,

AND

JOHN THOMAS COX, 84, HIGH HOLBORN.

1835.

WILLIAM HENRY COX,
5 GREAT QUEEN STREET, LINCOLN'S INN FIELDS.

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LECTURES ON SURGERY.

INTRODUCTORY LECTURE.

GENTLEMEN—While it is the province of the physician to attend to internal diseases, it is the duty of the surgeon to attend to those that are external; to perform operations for the removal of diseased parts; and to know how to regulate the system by the use of medicine, when local diseases are produced by constitutional derangement. Surgery is usually divided into the principles and practice. The first are learned from observations on the living when diseased, by dissection of the dead, and by experiments on living animals. Our deductions from these sources furnish us with the means of knowing a malady by its symptoms, the alteration of structure in a part when diseased, and the various ways in which Nature attempts the reparative process, both in external and internal parts. A man who has seen much of morbid preparations possesses great advantages; but his anatomical knowledge cannot be perfect unless he has frequently seen and assisted in the dissection of the human body. In the surgical science, hypothesis should be entirely discarded, and sound theory, derived from actual observation and experience, alone encouraged. The first is an ignus fatuus, which is sure to mislead; the last a polar star, a never-failing guide. Experiments on living animals have been found of the greatest utility in directing us to a knowledge of the means by which Nature acts in the reparation of injuries, and in the restoration of lost parts. Thus the method she would adopt in uniting a fracture in the bone of a dog, will show you the manner in which union of a fractured bone would be effected in man; the secretion of ossific matter by the blood-vessels being in each case precisely the same.

In the *practice* of surgery, also, many essential qualities are requisite on the part of the surgeon. The first of which is, neatness in the application of his remedies; awkwardness in this respect will frequently injure his professional prospects—the patient and his friends

often judge of a man's skill by hi[illegible] of bleeding, or from the application of a bandage; and it sometimes happens that "the hand spoils the head."

The next requisite is, gentleness of manner; patients having a natural dislike to operations, feel still more uneasy if they discover any thing in their practitioner's behaviour which makes them apprehend rough treatment.

Violence is in all cases bad, and is sometimes followed by fatal consequences.

I was invited by a surgeon, some years since, to see a patient who had a compound dislocation of the ankle joint: there existed a considerable degree of pain and inflammation; the surgeon at once suddenly introduced a probe, raised some of the parts by it, and, his Latin being as bad as his surgery, said with the utmost coolness, *Dedenda est Carthago!* "Carthage must fall!" Thereby implying that amputation must be performed; indeed, from the rough manner in which he treated his patient, there seemed no other chance for the poor fellow's recovery. In this case gentleness might have prevented the necessity for amputation.

But the quality which is considered of the highest order in surgical operations is self-possession; the head must always direct the hand, otherwise the operator is unfit to discover an effectual remedy for the unforeseen accidents which may occur in his practice. Without this quality a man may do well enough in ordinary cases, but can do little on sudden emergencies; it inspires confidence, and almost insures the success of the operation. These qualities forward the interests of professional men, whilst they diminish the sufferings of human nature. Patients generally form an opinion of a surgeon's ability by his manner; if he be of a dry, morose turn, he is apt to alarm not only the patient, but his whole family; whereas, he who speaks kindly to them, and asks for particular information, is supposed to have more knowledge, and receives more respect.

In all cases it is the duty of the surgeon, never to advise an operation, unless there is a probability that it will be attended with success: he should here, as in every instance, "do to others, as he would have others do unto him." Let it be always remembered, that operations cannot be *safely* undertaken by any man, unless he possess a thorough knowledge of anatomy. This is the real groundwork of all surgical science; and it has ever been found that half-anatomists are bungling practitioners; ignorance here, as it always will, gives confidence without power. But it is consolotary to know, that the human frame is better understood at the present epoch by *students* than it was

forty years ago by *professors.* With us, the march of improvement has been most rapid; and it has principally arisen from the assiduity with which the modern surgeons have pursued their avocations in the dissecting room. A few years since, all operations were attended with hazard; those now undertaken commonly do well, which can only be explained by our increased information. An old surgeon, now deceased, said, "that operations for extracting stones from the bladder, put him in mind of sailing between Scylla and Charybdis." It was replied, "that not to attempt them was certainly resigning his patients to Scylla!" 'Tis true, these operations require the most perfect anatomical skill; as do those for hernia, aneurism, and fractures of the bones of the head, attended with depression. Anatomy likewise teaches us how to discriminate disease; in which lies more than half the cure. Without this knowledge, dislocations frequently cannot be detected; whereby patients may become miserable for life, and thus the reputation of the surgeon be for ever lost. Some years since, one of the profession, whom I had long known, but had not seen for many years, called on me; I naturally inquired respecting his success. He replied, that his life had been like April, sometimes sunshine, sometimes rain. I rejoined, "How so? you have brought up a family genteely, and have, I understand, a respectable practice."—"True (said he), but a circumstance occurred some time ago which has given me much uneasiness; I was called to attend a case of dislocation of the shoulder joint, but it so happened that I could not discover it; after attending the patient for a considerable time, another surgeon was requested to see him, who at once pronounced the bone to be out, which in reality was the case, for in a very short time he reduced it. When the man recovered, he brought an action against me, I had to pay two hundred pounds damages, and the law expenses were two hundred pounds more. The loss of the money I did not feel, but I have severely felt being pointed at as an ignorant man."

A few years ago, one of the dressers in St. Thomas's Hospital wished to perform an operation: and he turned his attention to the surgery boy, who had a bad leg, and said to him, one day, "Abraham, I should like to cut off your leg"—"Indeed!" said Abraham, "I should not like it."—"Oh," said the dresser, "it will never be of any use to you in its present state, and therefore you had better be without it. I will take a lodging for you; I will give you some money, and you shall be well attended." The boy's scruples were overcome; he took the money, went to the lodging; all was fixed, and the operation began: but finding a great discharge of blood, he cried out to his assistant —"Screw the tourniquet tighter." He obeyed, but in doing so the

screw broke, and at this unforeseen accident the dresser lost all presence of mind; he jumped about the room, then ran to the sufferer, and endeavoured to stop the effusion of blood by compressing the wound with his hand, but in vain; his sleeve became filled with blood, and poor Abraham would have died in a very short time, had not a pupil accidentally called, who had the presence of mind to apply the key of the door to the femoral artery, by compressing which he stopped the bleeding, and thus gained time for the application of another tourniquet.

Some years ago, one of the dressers at Guy's Hospital, in bleeding a man, punctured the artery that lay under the vein (a situation which he ought not to have bled), and before the blood could be stopped, the person lost thirty-seven ounces. One of the surgeons cut down upon the artery at the elbow, and secured it. In doing this, he divided the principal veins; inflammation and mortification came on, and death soon followed.

I bring forward these examples to impress upon your minds that an imperative necessity exists for making yourselves well acquainted with anatomical science; without which you cannot conscientiously discharge your duty to society; and it is upon this you must lay the foundation for your future advancement.

The parts of the body most essential to be particularly studied, are, the brain, bones, arteries, veins, nerves, and joints. To each of these you must pay particular attention, and make yourselves well acquainted with its form, situation, and functions; otherwise you will only be exposed to ridicule, and perhaps worse, if, in your practice, you should be ignorant of the nature of these structures. You should know the nature of the human machine well, or how can you pretend to repair it? If you have a watch injured, you will not give it to a tinker to repair —you will get the best watchmaker you can to set it right. How then can it be supposed, that the finest and most perfect organization we know of, when out of order, should be consigned to the hands of unlearned persons? Mistakes of this kind do, it is true, sometimes happen, but much less often now than formerly.

When you dissect, do not attack all the parts of the body at once. The best plan is, to take the portion that you are examining to your room, and keep it fresh by plunging it into alcohol. Inspect it with care, and note down your observations. By these means a head will occupy your time for five or six weeks very advantageously.

Physiological knowledge is of the utmost importance to the profession of surgery: this gives you a knowledge of the healthy functions, and thus enables you better to understand the nature of diseased action. This was the rock on which Hunter stood, admired by the wise, and

abused by the ignorant; indefatigable in his research, he omitted no opportunity of exploding false theories, and substituting true ones founded on facts established by experiments. But it is said that he was a man of great genius: I do not think so; or, if he were, he owed it to his uncommon industry and assiduity. He was the last in the laboratory or study at night, and the first there in the morning, allowing himself very little time for repose. It was in this way he collected and arranged that Museum which will endure as long as any thing of the kind—the admiration of foreigners, as well as of our own countrymen. But we are still more indebted to him for the true principles of our science, which he displayed to us with a masterly hand. In this free country, the same way is open to all who choose to take it, who prefer honourable and laborious exertion to idle habits, which insure ignorance, and, finally, disgrace.

The study of medicine is important to the surgeon: he should be able to prescribe with certainty—should well understand the great influence of local disease on the constitution, as well as the *origin* of local disease from constitutional derangement. Without such knowledge, he knows but half his duty. On the other hand, a mere physician cannot be a good judge of surgical cases; and notwithstanding my respect for the physicians of Guy's Hospital, I would not hold my situation in that establishment, unless I had the right of prescribing for my surgical patients. I had, in one of these hospitals, a man under my care for a compound fracture, and had great hopes of saving the patient, as he was doing well; but a physician, whilst going through the ward, visited him, and ordered a cathartic, which, acting rather violently, disturbed him so much, that fatal consequences ensued. That a physician should not interfere with patients of this description is therefore evident; but I do not mean to say that one profession is to be upheld at the expense of the other: far from it; indeed they should mutually assist in the great duty of preserving human existence.

Reading will be found extremely useful, when it is select; but I would not recommend works to young students which lay down *systems* for their guidance; such a plan of reading is bad. It is better to read the detached works on particular diseases. To the pupils generally, but more particularly to those who are allowed to pass in this metropolis but one or two seasons in attending the different hospitals, I strongly recommend punctuality in their attendance at lectures, and at the dissections and hospital practice. In St. Thomas's Hospital alone, you have an opportunity of seeing above 800 in-door, and a vast number of outdoor patients, whose cases are equally useful as interesting to students. I caution the pupils from speaking unguardedly before the patients: it

can do no good to let them know what is intended for their cure, which it very often prevents. Some time ago a man came into Guy's Hospital, having a disease that required an operation, and by no means a dangerous one. A pupil, when conversing with him, asked him where he came from? the man replied, "From Cornwall." "O, did you," said the pupil; "Well, I can tell you, you will never see Cornwall again." The patient became alarmed, and immediately left the hospital.

I recommend to you, also, the practice of taking notes, but not hasty ones, as they do more harm than service, by causing one term to be mistaken for another.

I am happy to bear witness to the great improvement which has taken place, of late years, in the education of those who are coming forward in the various classes of medical pupils: this I consider a most essential advantage, as it tends, more than any other circumstance, to raise the character of the profession to its proper station. To the Company of Apothecaries, society is much indebted, as to them we owe the Act which makes a certain course of education indispensable to medical students. In the metropolis, surgeons, of course, are highly respected, but not equally so in the country, for there the practitioner is obliged to inspect the preparation of his medicines, and, necessarily, must be often in his shop. But general education, so essential to our profession in particular, is making rapid and desirable advances, whilst ignorance flies fast before it.

I particularly request the young pupils, whose friends have at great expense prepared them for an honourable and lucrative profession, not to lose their precious time in idle and vain amusements; and while they have those opportunities which our hospitals afford, to keep their attention steadily fixed on the various branches of science which are essential to a knowledge of surgery, and not suffer themselves to be led away from the true path to eminence by the idle and unthinking: for, I ask them, how they can, on their return home, look their friends in the face, if they have neglected their duties? But, on the other hand, should they conduct themselves with good sense, and apply with diligence to their studies, they will receive their just reward.

I have probably known ten thousand members of the faculty in the course of my professional life, to whose partiality I attribute my successful progress, more than to any merit of my own: and I should be wanting in gratitude if I did not acknowledge it. I have observed that well-directed assiduity will surmount all difficulties: you should not be deterred in your efforts, even by poverty, for it is a great stimulus to exertion, and to regularity of life; all, however, will not be equally studious, for some will be fluttering in the boxes of another theatre, or

come here only to interrupt their more steady fellow-students. But I will not suffer it as long as I have the honour of lecturing in this establishment: no man shall interrupt another with impunity. Perhaps some who are fashionably dressed may think proper to look down with a feeling of contempt upon the students whose attire is plain and more modest; but should such a feeling exist, I would advise such persons to pause awhile and consider what it is that makes one man superior to another in this profession. When they commence their career of public life, the plain, industrious, intelligent young man goes slowly but steadily in the right track of his profession, and rises to respectability, perhaps even to a high rank; on the other hand, the fashionable lounger, who neglects to improve himself, finds his want of knowledge and his bad habits equally retard him; instead of rising, he sinks lower; his friends disappear, and at last he falls into obscurity, reduced to a pitiable state, blaming and abusing his more fortunate rival. In conclusion, let me say, that if any of you wish to ask my advice or assistance in any way, I shall be most happy if you will call on me when you think proper. I do not say this from ostentation, but I always wish to show the junior members of the profession that I do not forget the friendship I have experienced from their fathers.

LECTURE I.

IRRITATION.

This being one of the most important topics in surgery requires to be attentively studied, and its effects carefully watched, before any one can practice in his profession with credit to himself or advantage to others.

Irritation is either local or general, and its effects are communicated from one part to another, through the medium of the nervous system, so that the heart, brain, and stomach, almost immediately after an injury has been sustained, even in the remotest parts of the body, will have their functions more or less disturbed in proportion to the extent of the injury and importance of the part injured. All the actions of the body are excited and sustained by internal and external impressions, which are called stimulants; the blood, for instance, being the stimulus to the blood-vessels; the bile to the intestines; and caloric, in a certain degree, a stimulus to the whole system. Between all the different parts of the human frame there exist intimate relations, which correspond with each other, and carry on a reciprocal intercourse of action. The beautiful harmony produced by these concurrent phenomena is called sympathy. Thus, impressions not only produce effects on the part to

which they are directly applied; but in consequence of the freedom of communication between the nervous system, parts of the body situated at a distance from those in which the original mischief exists become affected by it: the real nature of sympathy is yet unknown, but we are acquainted with many of its effects. Thus numerous examples of sympathetic actions may be adduced; the communication which exists between the uterus and breasts is a striking instance of it. Sneezing is a sympathetic action between the nose, velum palati, and the abdominal muscles; coughing, also breathing, and the expulsion of the fæces, are a few among the numerous examples which might be enumerated.

But sympathetic action is also the result of injury and disease, becoming the cause of restoration on the one hand, or of destruction on the other, and this state of the body I call irritation. Irritation, gentlemen, may be defined to be an altered action, excited in the system by an unnatural impression. Thus sympathetic pain is experienced in the knee and foot from diseased hip, and at the extremity of the penis when there is stone in the bladder. The passage of an urinary calculus through the ureter occasions retraction of the testicles and pain in the thigh; disease of the prostate causes pain on the inside of one or both thighs. A disease of the liver occasions pain in the shoulder; a diseased testicle, pain in the loins; irritation of the intestines, an itching of the nose.

These sympathetic effects, which we have just been describing, do not consist of morbid actions in the parts thus affected, but of disordered sensations. But morbid actions are also, sometimes, excited in parts near to, or at a distance from, those originally affected. Inflammation of the testicle is frequently the consequence of irritation in the urethra; and swellings of the breast, of a morbid action of the uterus: but there is no organ so much affected by irritation, or sympathetic influence as the stomach. For instance, if a blow is received on the head, causing injury to the brain, vomiting is one of the first and most constant symptoms, being imparted to the stomach through the eighth pair of nerves, and by this we are led to detect the injury. Vomiting is produced when the testicles are injured, or intestines burst, wounded, or strangulated, and from a gall-stone passing the biliary duct; indeed, an obtuse pain in any part of the body will occasion sickness.

The consequences of irritation are so numerous and important, gentlemen, that I shall relate to you the medium of its communication. Irritation is generally communicated through the medium of the nerves, of which there are two grand divisions in the body. The first composed of the brain, spinal marrow and their nerves, which naturally convey sensation and volition; the second consisting of the grand sympathetic

nerve, the centre of which is behind the stomach, in the semilunar ganglion and solar plexus. The modes of sympathetic communication are various. In some instances, the course of irritation is from the irritated part to the sentient extremity of the nerve, as the pain experienced in the knee and foot from a disease of the hip. In other cases the course of sympathy is from the affected part to the origin of the nerve, as in pain in the loins consequent on diseased testicles. Irritation on the nerves of the grand sympathetic is communicated to the stomach, probably through the medium of the semilunar ganglion, and all injuries to the stomach are attended with serious effects. I could relate to you several instances in which injury to this organ had proved fatal. A man walking through Fleet-street, one day, happened to quarrel with a woman, when another came up, and gave him a blow in the region of the stomach, which caused almost instantaneous death. On dissection, no cause could be found to account for his sudden death. A man belonging to the India House was attempting to lift a weight, when another came up, and jocosely said, "Here, stand on one side, and let an abler man attempt it;" and at the same instant gave him a slight blow on the stomach, when the poor fellow dropped down and expired. His body, upon being opened, showed no marks of violence.

Irritation is either local or constitutional.

Sometimes it is local, affecting only particular parts; at others, attacking the whole system. A decayed tooth will produce an abscess, and the matter will escape by forming an opening through the cheek. This ulcer will be very difficult to heal if the tooth remain: but extract it, and the disease will quickly disappear, the cause of irritation being removed. Many cases of this kind have fallen under my observation, and I will relate a few by way of illustration.

Cases.—Some years since, two persons came to me from Wisbeach, (without being aware of each other's situation, or of what surgeon each had consulted), both having an extensive abscess near the alveolar process, which had produced an opening through the cheek. The disease in both had been of long standing, and the pain extended to the surrounding parts of the jaw. I directed a diseased tooth near the ulcer, in each person, to be drawn, which being done, the patients rapidly recovered.

A lady in Essex had, for a long period, been afflicted with a fungoid granulation, which protruded through an ulcer in the cheek, and which had resisted the use of every means. Upon stating one day that a tooth near the part was occasionally painful, she was recommended to get it drawn; the tooth was extracted, and the fungus quickly disappeared.

A gentleman of my acquaintance had, for many years, been exceed-

ingly annoyed by an ulcer on the chin; every attempt to heal it having proved ineffectual, it was considered incurable. At length, one of the teeth opposite the wound becoming painful, it was extracted, when, to the delight and astonishment of the patient, his malady disappeared. These cases are mentioned, to show the importance of endeavouring to ascertain the *causes* of diseased sympathetic actions, as the removal of those effects will depend on the cure of their causes. If the causes be undiscovered, the effects are likely to continue in spite of every means that you may employ.

The constitutional or general effects of irritation are frequently produced by the most trivial local causes. A person, on having a bougie passed into the urethra for the first time, feels faint, becomes sick, looks pale, and, unless you prevent it, will fall on the ground. On placing him in the recumbent posture, he soon recovers his senses: but constitutional irritation frequently comes on in the evening, which, however, soon ceases. From the irritation of the urethra you see, gentlemen, that the stomach is influenced, the actions of the heart are suspended, and the powers of the mind gone. The symptoms of constitutional irritation following injuries are best exemplified in compound fractures. In these cases, the irritation runs very high, and the heart, brain, and stomach are much affected. A person receives an injury to the leg, producing compound fracture of one or both bones; constitutional irritation commences generally in twenty-four hours; the patient complains of pain in his loins, extending up the spinal cord, and pain in the head. He then becomes restless, and his countenance anxious; the tongue at first is dry, and covered with a whitish fur; but, as the symptoms increase, it becomes yellow, and lastly, coated with a thick brown fur. There is loss of appetite, the stomach becomes irritable, and nausea and vomiting supervene. The secretions are diminished, and the stools are white. As the severity of the complaint increases, the pulse becomes quick, hard, irregular, and alternately intermittent. The respiration is hurried, intellect deranged; all impressions on the senses are painful; subsultus tendinum, hiccough, vomiting, and tension of the abdomen come on; the patient sinks into a low muttering delirium, and soon expires. Thus, in constitutional irritation, whether from injury or disease, every part of the system is affected by it, and this effect appears to be produced in the following manner:—When any part of the body receives an injury, the nerves convey to all the important organs of the body, spinal marrow, heart, stomach, &c., an impression of that injury. Nature immediately commences the restorative process, by stopping all the customary secretions; the various outlets being thus closed, the blood collects in large quantities in the heart and great blood vessels,

which propel the blood with increased force to the wounded part; this gives rise to some form of inflammation, the one best suited to accomplish the desired effect. Here is an illustration of the manner in which nature contends for cure; during the battle, she occasionally requires to have her ardour checked, or calls for support in proportion to her want of power; we must watch her proceedings with an eagle eye, and be exceedingly cautious in all our proceedings: for if we should open the various sluices of the body, and restore the secretions too soon, we may, by abstracting blood from the injured part, prevent the restorative process; or by increasing the excitement, disturb nature's operations.

The degree of constitutional irritation, resulting from injury, depends on several causes; these are the importance of the part injured; the extent and nature of the injury: the state of the constitution, age, and previous habits of the patient. Thus we see, that constitutional irritation is very different in some persons to what it is in others; so that a wound, which in one man would be attended by the most dangerous consequences, might not, in another, disturb the functions of any important organ: this greatly depends on the state of the system at the time of the injury; thus, many gentlemen present would probably in autumn overcome a disease, that in the spring would overcome them; that is, if they have been paying proper attention to their professional studies, by devoting their time to anatomical pursuits.

The following cases are important, and place in a strong light the dreadful constitutional effects which occasionally result from very slight local causes:—

A man, who had lived intemperately, was bled by the late Mr. Saunders, on a Tuesday; on Thursday (having indulged in the interim in the pleasures of the table) the wound in the arm was inflamed: on the Saturday the inflammation had considerably increased; on the Sunday gangrene commenced; and on the Monday I was asked to see him. I found him with delirium, hiccough, and subsultus tendinum; and on the following day he died. On dissection, the skin, to a great extent round the wound, was found mortified; the cellular membrane had inflamed and suppurated, but the vein which had been opened was not inflamed.

Dr. Ludlow, of Calne, whilst shooting, pricked his hand with a thorn in getting over a hedge; the part soon became inflamed, and though he procured the best surgical assistance, yet he died of tetanus within a week after the accident.

Another remarkable case was that of a brewer's servant, who, in removing some casks on a Saturday, had a small splinter of wood forced under the thumb nail; at the moment he did not regard it, but in the

same night he awoke in dreadful pain, and requested his wife to get up and make a poultice; this he applied, but it did not afford him any relief. On Sunday he became worse: Tuesday the pain had extended up the arm, and his hand was considerably swollen. On Thursday I was requested to see him, and, on examination, found that matter was formed in the hand; I made an opening with a lancet near the part where the splinter had entered, when a large quantity of pus was discharged. The man appeared greatly relieved, and I thought he would do well; but upon hearing a noise as I was about to quit the room, I looked round: he had, by a convulsive effort, raised himself in bed, but immediately fell back, and expired.

Case.—An instance of a totally different nature from those just mentioned, which shows that a great degree of injury may be incurred, and the person yet do well, occurred in another brewer's man who was run over by a dray. There was compound fracture of the elbow joint, extensive laceration of the integuments, and a large wound communicating with the joint. The man was admitted into Guy's Hospital; an operation was proposed, but the patient would not consent. The wound was therefore dressed, and in a short time it completely healed, without any unfavourable symptom showing itself.

Irritation is greatest in children, and least in aged persons; the former are very much affected by operations, whilst the latter are very slightly so. Children under two years of age, upon having stones removed from their bladders, will be frequently carried off by convulsions; therefore, if you can possibly avoid it, never perform the operation on a very young child; at all events, not under three years of age.

One of the worst kinds of irritation is that occasioned by the absorption of morbid matter during dissection; it is therefore impossible that you can be too careful of the instruments you use in dissecting and opening bodies, as carelessness on this point has caused the loss of many a valuable life.

LECTURE II.

TREATMENT OF IRRITATION.

The treatment of irritation being much the same as that required in inflammation, I shall now give but a short description of it.

When constitutional irritation arises from a local cause, the remedies must be chiefly directed to the removal of that cause, or to lessen its effects on the constitution; but, on the contrary, when local disease is either promoted or aggravated by constitutional derangement, then your

remedy must be directed to the disorder of the system; and as that improves, so will the local affections disappear.

Case.—A short time since, a case of compound fracture was brought into Guy's Hospital. For the first five days there was no alteration; after a time, however, the man's constitution suffered very considerably; a probe was passed into the wound, and a loose portion of bone was found pressing against the tibialis anticus; the part was dilated by a scalpel; the detached bone extracted; the constitution began to recover its former vigour, the patient's health very rapidly improved, and he is now discharged cured.

A case of simple fracture of the superior portion of the tibia was admitted into St. Thomas's Hospital, which was followed by violent irritation of the whole system. The whole limb became inflamed, and matter formed at the seat of the fracture. After a short time it was thought proper to amputate the limb, when, on examining afterwards, small pieces of bone were found, which kept up the irritation. The patient soon recovered from the operation.

Constitutional irritation must not be too suddenly subdued nor destroyed, as a certain degree of irritation shows that nature is endeavouring to accomplish the restorative process; keep it within bounds, carefully watch its progress, and, if necessary, check its violence, but do not entirely destroy it.

There are two means of reducing irritation.

First, by restoring to the different organs their various secretions, by which the outlets become opened, and fever lessened. A man who has his skin hot and dry, and his body altogether hot, will feel well and be relieved, if you can produce on the surface a free perspiration. To produce the secretions from the intestinal canal, you must give aperients; but when the irritation is very severe indeed, you must not limit your medicine to any particular part, but endeavour to restore all the secretions. This will be best accomplished by administering mercurials to act upon the liver, saline medicines upon the intestines and kidneys, and antimonials on the skin.

The *second* method of relieving irritation is to allay the excitement of the nervous system; this may be done by giving opium and antimony combined, or calomel, antimony, and opium, to act on the skin and liver as well as the nervous system. The dose for an adult is two grains of calomel, two of antimonial powder, and one grain of opium. To this you may add saline medicines, if you like, as they are given as much to assist the medical man as his patient! It must not be considered, however, that such medicines are entirely useless: the liquor ammonia acetatis, with tincture opii, is a good medicine. The alka-

lies, judiciously given, lessen the irritability of some organs, as the bladder, when in an irritable state.

In cases of irritation, bleeding must be resorted to with care, for if it be carried to a great extent, the powers of the constitution will be unequal to the reparation of the injury.

A man was brought into Guy's Hospital with concussion of the brain; the dresser who admitted him was a great admirer of venesection, and bled the patient three times a day; in ten days he died. Upon examining the head after death, a very slight laceration of the brain was found, but no signs of any attempt at restoration. The continued abstraction of blood had robbed nature of her restorative powers. In compound fractures it is likewise extremely dangerous to bleed largely.

When there is chronic irritation, no medicine will be found equal to the Plummer's pill, five grains night and morning; it increases the secretions of the liver, intestines, kidneys, and skin. If the blue pill be given, or calomel, it should be followed by an aperient in the morning, else its action will be confined to the liver.

INFLAMMATION.

The next subject is inflammation. Inflammation is the means by which local injuries are repaired, and it may be therefore considered as the restorative principle. There are four signs that commonly attend it, viz. redness, pain, increased heat, and swelling.

First. *Redness.* This arises from an increase of the red particles of blood in the part, and may be distinctly seen when the inflammation is superficial, as in inflammation of the conjunctiva of the eye.

Second. *Increased Sensibility*, which is owing to distention of the nerves by the greater quantity of blood determined to them. Parts naturally little sensible are quite the reverse when in a state of inflammation. I was called a short time since to a case where it was requisite to saw off a small piece of the tibia. During the operation I opened a cavity, in which was a small piece of bone embedded in granulations; the latter were extremely sensitive: extract of belladonna was applied, which gave instant ease. Bones, though nearly destitute of sensation in their healthy state, are sometimes extremely sensitive when inflamed.

Third. *Increased Heat.* Mr. Hunter denied that this existed. He made an incision two inches deep into the gluteal muscles of an ass, and into the wound he introduced a tin canula, one inch and a half long, so that there was half an inch of wound below the canula; he then passed a plug of wood through the canula, to the bottom of the wound, and confined it there, in order to prevent an union of the muscles. This was on a Wednesday. Immediately after the wound

was made, a thermometer was introduced into it, and the mercury rose to 100 deg., exactly as another did at the same time which had been passed in the vagina. On the next morning the plug was taken out, and the ball of the thermometer introduced to the bottom of the wound; the mercury rose to 100 deg.; the plug was then again returned, and secured as before. In the evening the experiment was repeated with the same result. On Friday morning the thermometer, when introduced, rose to 99 deg. only; and in the evening it rose to 101 deg. On Saturday morning, when introduced again, the mercury reached 99 deg.; in the evening 100 deg. Mr. Hunter also introduced a thermometer into the opening made during the operation for hydrocele, and it rose to 101 deg.; after twenty-four hours it was no more than 100 deg. Though no increase of heat is manifested in internal inflammation, yet when it occurs on the surface of the body, an alteration sometimes of several degrees takes place; as on the inside of the thigh, where a blister was applied, the thermometer rose to 90 deg.; while on the inside of the opposite thigh it only reached 83 deg.

Fourth. *Swelling.* This is owing in part to an increased determination of blood to the part, and also depends on effusion of the fibrin of the blood, which, in coagulating, deposits serum in the surrounding cellular tissue.

Inflammation has four terminations.

First. *Adhesion.* This arises from the fibrin of the blood being effused into the cellular membrane, by which the parts become glued together.

Second. *Suppuration, or secretion of pus.* This is composed of particles nearly similar to those of the blood, only differing in colour, swimming in a fluid resembling serum, and coagulating, as serum does, when exposed to the influence of heat.

Third. *Absorption, or ulceration.* This arises from an increased action of the absorbents, produced by pressure united with inflammation, by which the parts are absorbed.

Fourth. *Gangrene*, which consists in the destruction of the life of an inflamed part. The arteries, enfeebled by excessive action, are deprived of their vitality, the blood coagulates in them, and gangrene is produced.

These are the constitutional effects; the local ones are similar to those of irritation, which I mentioned to you in the last lecture.

Inflammation produces different results in different parts. When seated in the skin, it usually becomes extensive, because the surface is unbroken. Its colours is very florid; it separates the cuticle in the form of vesications, which usually contain serum, but also in some

cases fibrin; a serous effusion is also produced by it into the subjacent cellular tissue. In some instances it is preceded by fever, in others followed by it. In the cellular membrane, inflammation produces an effusion which obliterates or fills its cells; if it proceed, it occasions suppuration, and produces an abscess, the contents of which are frequently discharged by the process of ulceration. In debilitated irritable constitutions inflammation destroys the cellular tissue, and produces carbuncle, which is a sloughy abscess in the cellular tissue. When chronic it occasions tumours of various kinds, as the steatomatous or adipose; or, under peculiar circumstances, those of a malignant nature, as the scirrhous, fungous, &c.

Inflammation of fasciæ is generally extensive, from the large surfaces they present; they are often seen inflamed in compound fracture, producing redness of the skin to a considerable distance, and it is a very unfavourable sign in this accident. When matter is produced by inflammation of this texture, and is seated under it, great irritative fever succeeds until it is discharged; as, for example, in the palms of the hands, or soles of the feet.

When inflammation attacks muscles, it is known by the spasmodic twitchings which attend it. Tendons are not very susceptible of inflammation, but they sometimes become inflamed to a considerable extent. Punctured wounds of tendons are apt to produce tetanus more than wounds of other parts of the body. Matter formed under tendons burrows to a great extent, and produces violent irritation, as under the tendon of the occipito-frontalis muscle, and the covering of the temporalis.

Inflammation in the absorbent vessels is marked by red lines on the skin in the course of these vessels. These form hard knots, from the skin participating in the inflammation. Their glands become also inflamed, and both glands and vessels occasionally suppurate. They more frequently inflame from common irritation than the absorption of poisons.

The arteries are rarely inflamed, excepting after wounds, or the application of ligatures. Inflammation, however, of the arteries may be very extensive, when it occurs in a person whose health is very much deranged. I have known instances where it extended even to the heart. I was present when Mr. Cline opened the body of a man who had a ligature put on the femoral artery near the groin, and who died at the second week from the operation. The internal surface of the artery was inflamed, as was also that of the external and common iliacs, and the aorta was of a florid red internally, as far as the valves of the heart.

Veins which are inflamed from wounds become like hard and broad cords, and extremely tender to the touch; and if it occur from bleeding, it extends from the orifice to the axilla. I have seen several patients die from this cause; and, on examination, the inner coats of the arteries have been generally found adhering. I have seen suppuration of a vein, and I once saw an abscess in the longitudinal sinus of the dura mater, of which we have a beautiful specimen in the anatomical collection at St. Thomas's Hospital. When inflammation of the veins is produced by the application of ligatures on them, it will be found to be greater below the ligature than above it.

Nerves are very rarely inflamed, but when they are, the pain is excessive, and there is a tingling sensation in the parts to which the nerve is distributed. Wounds of nerves, though extremely painful at the moment, are followed by little irritation.

Case.—The wife of a medical gentleman was obliged to have the posterior tibial nerve divided, for a painful tumour on the nerve, which I did in the presence of Mr. White, surgeon to the Westminster Hospital: although the operation was dreadfully painful, and the pain extended through the brain, spinal marrow, and the nerves proceeding from it, yet it did not affect the nerves of the great sympathetic, directly or indirectly. I have also had occasion twice to remove portions of the sciatic nerve, when but little constitutional irritation followed. Severe pain takes place sometimes in the course of the nerves, but whether it be from inflammation or not, I have not been able to ascertain by dissection. When the pain is excessive, it is called tic doloureux.

Ligaments, like tendons, are not very prone to inflammation in healthy constitutions; but the synovial membrane which lines them is highly so, and the inflammation has a tendency to go on to the suppurative process. In scrofulous persons, the synovial surface becomes inflamed, and the ligament covering it thickened, so as to produce great enlargement of the joints.

Cartilage in joints ulcerates from inflammation, and often becomes entirely destroyed.

The bones, like other parts of the body, are subject to inflammation; and when fractured, it is by this process that their union is effected. Suppuration, ulceration, and mortification, or the death of the bone, also attack this structure; thus you see that, like other parts of the body, it is subject to the different processes of inflammation.

Serous membranes, when inflamed, are remarkably disposed to pass into the adhesive inflammation; whilst mucous membranes, on the contrary, generally go into the suppurative state. Mr. Hunter made several

experiments to confirm these facts, which have been verified by later physiologists.

Inflammation may be of the healthy or unhealthy kind. No wound can be restored without the former; even the small puncture made in bleeding would inevitably destroy life, were it not for this salutary principle; a slight inflammatory action throws out upon the edges of the wound adhesive lymph, by which they become permanently united. When a ligature is put upon a large artery, unless inflammation supervened, no good effect would be produced. The first thing nature does in this case is, to form a clot of blood at that part of the vessel where it has been tied; inflammation supervenes, adhesive matter is thrown out, by which the internal coats of the artery become firmly glued together, and hemorrhage prevented. If the constitution be in an unhealthy condition, this process will not be effected; so that when the ligature comes off, the person may die of hemorrhage. Inflammation, without any obvious cause, is generally of the unhealthy kind, and arises from irritability of the constitution, and an enfeebled state of the affected part.

LECTURE III.

ACUTE AND CHRONIC INFLAMMATION.

INFLAMMATION is of two kinds, Acute and Chronic. The first usually goes through its various stages with great rapidity, while the latter is exceedingly slow in its progress, and is either the result of acute inflammation, or owing to a peculiar state of constitution, occurring in persons who have lived intemperately, or who have been exposed to excessive and laborious exertion, or who are the victims of anxiety and disappointment.

Acute Inflammation.—One of the best examples of acute inflammation is seen in the breast after delivery. The adhesive stage is marked by hardness and pain; the suppurative, by irritative fever, fluctuation, and throbbing or pulsation; ulceration usually succeeds in a short space of time, and the matter is soon discharged.

Chronic Inflammation.—A good example of acute inflammation, terminating in chronic, is observable in ophthalmia. When consulted in cases of this description, during the acute stage of inflammation, you must bleed both locally and generally. This may be done either by opening a vein in the arm, by the application of leeches to the temples and palpebræ, or by opening the temporal artery, which sometimes relieves from its free anastomoses with the ocular arteries. You should

use such applications as will soothe and allay the local irritation, and these should consist of narcotic and emollient fomentations. When by these means the acute inflammation ends, the chronic frequently begins. In the first, our object is to diminish power; in the second, it is necessary to stimulate the vessels, to contract their diameters, to lessen the quantity of blood which has accumulated in them, and thus restore them to their natural state. This is best effected by astringent and stimulating lotions, as the solutions of alum, sulphate of zinc, nitrate of silver; and as the system of depletion required during the acute stage may have produced debility, the use of tonics must not be forgotten.

An instance of chronic inflammation succeeding the acute may be seen in gonorrhœa. During the first stages of this complaint, we are obliged to check the action of the vessels of the urethra, but afterwards to excite it by the balsam of copabai, and slightly stimulating injections.

COMMON, OR SPECIFIC INFLAMMATION.

Inflammation is of two kinds, either common or specific.

The first, with its terminations, has been already described, and is called healthy inflammation. But the second, or specific, is of a peculiar kind, and is called unhealthy. In this inflammation, the vessels have an entirely different action to what happens in the healthy state, and thus the fluids and solids they secrete have a decidedly opposite character.

There are two descriptions of specific inflammation: the first is produced by a peculiar condition of the constitution; and the second, by the application of a poison.

Gout is an example of the first kind. If a man for a length of time yield to every injurious excess, loading his stomach with food and wine, so as to weaken the digestive powers, he probably excites in his system what is called the gouty disposition; he experiences dreadful pain in one or more of his toes, &c., and severe inflammation ensues, which frequently terminates in the secretion of a matter that speedily becomes solid, usually called chalk-stone; this name, however, is incorrect, as it has been proved by the analysis of Dr. Wollaston to consist of uric acid and soda, consequently is now very properly named urate or lithate of soda.

The formation of scirrhus or cancer is another example of specific inflammation, arising from a peculiar state of constitution. Let us suppose that two women receive each a blow on the breast; one woman with a constitution in a healthy, vigorous state, and the other with a system predisposed to the formation of cancer; in the first individual the inflammation will be strictly healthy, going through its different

stages until a cure is accomplished; in the other person, owing to a constitutional peculiarity, the same extent of injury will produce cancerous disease, a malady over which medicine has no influence, and extirpation is only an uncertain remedy. Persons afflicted with cancerous or fungous complaints are of exceedingly anxious minds (at least nine times in ten); this anxiety occasions a sort of irritable fever, which invariably proves detrimental.

But the best example of specific inflammation is scrofula. Persons attacked by this disease have generally light hair, fair complexion, delicate appearance; when inflammation occurs, it is slow in its progress, although easily excited; and at last, ulceration taking place, the discharge consists of curdy matter, or a thin serous fluid, not at all resembling the pus which is formed in healthy inflammations.

The second kind of specific inflammation is caused by the application of poisons. Thus, in gonorrhœa, the matter secreted is widely different from common healthy matter, having, in the first place, a much larger quantity of mucus mixed with it; and secondly, when applied to a secreting surface, is capable of exciting in the part an action by which similar matter and the same effects can be produced. The matter of small-pox occasions the same results, and as far as constitutional effects are concerned, it does not seem material how large or how small a quantity of the poison is applied, the result in each case depending upon the state of the constitution.

There is another kind of inflammation which I would call the *irritable*; in this disorder the nerves are much more affected than the blood-vessels. You are called probably to attend a person, who tells you that he feels in a particular part, as the hand or arm, a most agonizing pain: and if inexperienced in these matters, you will be inclined to doubt the correctness of your patient's statement, and the more so as you can discover no alteration in the appearance of the part. It may not be amiss to mention here what happened to me some time ago. I was requested to see a lady having this complaint in her foot: I tried, by every possible means, to remove it, but in vain. When unsuccessful, I invariably recommended the sufferer to some one else. This lady consulted two other very eminent surgeons, but their efforts, in like manner, were unable to afford relief; and finding that she got worse in town, she went into the country for change of air, where, without any medical means being employed, she entirely got rid of her troublesome companion. I saw this lady afterwards, and she described the pain that she used to feel as horrible; it was constantly at the bottom of her foot; and if she walked but a very short distance, it occasioned a confinement during four or five days.

The eyes are very subject to this torturing disorder. But no parts are more frequently attacked by it than the breasts of young women. It produces such a degree of tenderness that they cannot bear the slightest pressure, and their stays consequently occasion great inconvenience; the pain extends to the shoulder, down the arm, and even to the elbow, at the same time producing constitutional irritation. To cure these pains and general derangement, such medicines must be given as will influence the secretions, but more particularly those of the uterus.

The irritable inflammation frequently attacks the testicles, and renders them exceedingly sensitive, the slightest pressure causing very great pain. There is in these cases little or no alteration of size; if any difference, the affected one is the smallest. In three instances I have been obliged to remove testicles for this disease. The subject of one of these cases was a gentleman from South Carolina: he came to England for advice, and went the whole round of medical men, without experiencing any alleviation of his sufferings. He then desired me to remove the torturing part; this was done, and the gentleman went back to his native country quite well. I heard, that soon after his return he got married, and am happy to say, that his lady had a child.

The bladder is also very commonly disordered by this irritable inflammation, and the symptoms, in many respects, resemble those of stone—in both cases there is pain in making water, and the urine is frequently mixed with blood. The grand difference in the two cases is this: the irritable bladder is most painful when the organ is *full*; the bladder that contains a stone, when it is *empty*. Upon dissection, the inner coat of an irritable bladder has been seen the colour of red velvet. I have known this irritable inflammation attack the rectum, and produce excessive suffering, which was relieved by large doses of soda. Soda, rhubarb, and the compound powder of ipecacuanha, are the best remedies.

Inflammation sometimes arises from debility, and this state is frequently seen in the lower extremities of old persons, in whom the blood returns to the heart with difficulty. From this weakened power, the arteries are called upon for unusual exertion, and inflammation of the skin succeeds, frequently attended with incrustations, a serious discharge, and sometimes with a watery secretion into the cellular tissue.

Irritable persons are much more predisposed to inflammation than others, and when it occurs to them it is of a more dangerous nature than in those who are not irritable. Thus in fevers, when the constitution has been much weakened, the parts on which the body has been resting become inflamed, and quickly mortify. But in fractures, where the system is healthy and strong, although the patient remain many weeks in

bed, no such effects are produced. Where there is great irritation, inflammation is always dangerous; and the application of a blister to the chest, for the removal of a cough after measles, frequently, in this town, destroys it by bringing on mortification. Mercury, in like manner, by rendering the body irritable, disposes it to inflammation; and it is wrong to operate on a patient immediately after a mercurial course, on account of this inflammatory tendency.

The exciting causes of inflammation are whatever produces an unnatural state of the part, calling upon nature for its reparation, which she effects by the process of inflammation, as bruises, warts, pressure, extraneous substances, &c. &c. The manner in which nature repairs these injuries will be more fully explained hereafter.

Proximate Causes of Inflammation.—With regard to these there has been, and still is, much difference of opinion. Boerhaave's opinion, of an obstruction in the smaller vessels, arising from the thickness of the blood, is false—for, instead of being thicker, it is absolutely thinner. Cullen's theory, of spasm in the extreme vessels, is equally erroneous. These are the results of opinion not founded upon observation. We should observe first, and think afterwards. The true proximate causes of inflammation appear to be an increase of action in the vessels of the part, and an increase in the size of the vessels themselves. These phenomena are well demonstrated by the following experiment; viz. Stretch the web of a frog's foot, and place it under a good microscope, and put on it the smallest drop of nitric acid, or prick a spot with a pin: you will soon perceive in the vicinity of the irritated part considerable agitation, and presently a red particle of blood will make its appearance in a vessel that had previously been the receptacle of transparent serum only—each pulsation pushing it on farther and farther. This red particle distends the vessel, and is succeeded by others passing freely into the vein. All the vessels of the part then take on similar actions; and thus you create under your eye, speaking figuratively, meandering rivulets of blood. The dilation of the vessels in inflammation is not, however, confined to the part itself, but is also observable in the larger arteries leading to the scene of irritation: thus, in persons who have died, having inflammation in a foot, the femoral artery on the affected side has been found larger than the opposite. I before explained the manner in which nature throws a quantity of blood to a part for the purpose of repairing an injury, or for the removal of irritation; I will give another illustration of this, which, if you have not seen, most probably all of you have felt. It is this: when any offending matter gets under the eyelids it produces irritation;—nature immediately sends a quantity of blood to the lachrymal gland—this blood occasions a secre-

tion of tears, and these are directed in streams over the eye, for the purpose of washing off the offending substance.

[Sir Astley then stated, that he would show a beautiful specimen of fungus hæmatodes. The tumour was of very large size, and, when cut open, exhibited the usual characteristics of this malignant disease; viz. cysts filled by a transparent fluid, extravasated blood in clots, some of its parts were whitish, while others were very dark, and the whole was of a spongy, elastic texture.]

LECTURE IV.

TREATMENT OF INFLAMMATION.

This is either constitutional, local, or both combined. When any important organ is injured, or its functions disturbed in consequence of the influence of the injury on the constitution, the treatment must be invariably constitutional, let the local be whatever it may; for no vital organ can be disturbed in its functions without producing general derangement, which will be, more or less, in proportion to the importance of the part wounded, and the extent of the wound. Inflammation, however, in many persons, requires constitutional treatment, whether any important part be injured or not; as, in irritable habits, where very trivial local damage will speedily affect the entire system.

The most powerful means of relieving inflammation is by the abstraction of blood. Its beneficial effects principally result from producing a diminution of nervous power; and that it does accomplish this is proved by the syncope which it occasions. Thus, often the removal of a very small quantity of blood even causes a suspension of the mental faculties, as well as of all the voluntary functions. Fainting, however, cannot be suddenly produced, unless the patient be in the erect position at the time the blood is drawn: for it is the loss of this fluid by the vessels of the brain which is the immediate cause of fainting. To prove this, when you next bleed a man until he faints, place him in the recumbent posture, and let his head be situated a little lower than his body, to facilitate the return of blood to the brain; in a very short time after being thus placed he will open his eyes, and all his faculties will resume their former abode.

The second mode by which bleeding relieves is by lessening the quantity of blood; for when there is much fulness of the vessels, the momentum will necessarily be great, and consequently the vital fluid will be thrown with greater power, not only to the inflamed, but to every other part of the body.

The third mode by which bleeding proves serviceable, is by facilitating the re-establishment of the secreting functions.

The indication for bleeding is a *hard* pulse. In this state of the pulse the diameter of the vessel is diminished, yet the action is exceedingly strong, and each pulsation of the artery feels like the vibration of a wire; whenever, therefore, you find this description of pulse, you will be justified in taking away blood.

The hardest pulse that I ever met with, was in a person who had inflammation of the heart; in inflammation of the lungs and of the brain the pulse is hard, but not to be compared to this. The pulse, however, is not always hard when inflammation attacks important parts. The contrary is sometimes the fact; for, when the stomach or intestines is thus affected, the pulse is scarcely discoverable. Persons, unacquainted with the nature of this fact, are frightened at seeing a man frequently bled, who has, for example, strangulated hernia, and will often exclaim, "Pray don't bleed him any more, see how pale he is, and his pulse is almost gone." Well then, recollect, that in inflammation of the abdominal viscera the pulse is feeble; but inflammation of the liver, however, is an exception to this rule.

Quickness of pulse is not in itself a sufficient proof that bleeding is requisite, but when united with hardness, no additional evidence of its necessity can be wanted; therefore, never bleed where there is a quick pulse, unless at the same time it be a hard one. The indication for a repetition of blood-letting is said to be a buffy state of the blood, but your decision must not be governed by this appearance, you must still have a hard pulse. When blood is cupped it is said to be a proof of strength, and that bleeding should be repeated; the following case, however, will show that even a cupped state of the blood and buffiness conjoined are not sufficient evidence to warrant a conclusion that venesection may be repeated. A man at Guy's Hospital, in the last state of scurvy, and whose blood-vessels were so weak that a very slight pressure upon the skin produced ecchymosis—whose gums bled frequently, and whose pulse was exceedingly feeble and quick—had taken from his arm, at my request, a very small quantity of blood, by way of experiment; after standing for a few hours, it became not only buffy, but exceedingly cupped. When, therefore, you employ bleeding, it may be of importance to you to keep this experiment in your remembrance.

The quantity of blood which should be drawn at a time, in inflammation, must depend entirely on the severity of the complaint.

The proportion of blood, compared with the solids, which can be drawn from an animal before it dies, is about one pound to sixteen. I ascertained this fact in the following manner:—I took a small dog,

weighing fourteen pounds, and opened his jugular vein; in this way eleven ounces were discharged, when the dog fainted. I then opened the carotid artery, and from this source obtained three ounces more. Thus fourteen ounces of blood were drawn from a dog weighing fourteen pounds; so that one ounce of blood to sixteen ounces of the solids is about the correct proportion.

When you bleed to relieve inflammation, the blood should be abstracted as rapidly as possible; therefore the orifice made into the vessel should be of considerable size; for, if it be allowed to run slowly, the vessels have time to accommodate themselves to the diminished volume of circulating fluid; so that the system scarcely receives any shock when blood is abstracted in this gradual manner. The grand object, indeed, is, to produce fainting; to effect which, blood must be suddenly withdrawn.

You may bleed so as to produce constitutional and local effects at the same time. A patient of Mr. Foster's in Guy's Hospital, who had a concussion of the brain, was bled in the external jugular vein; immediately after the operation, the pain of the head ceased, and the irritable fever disappeared.

When you have accidents brought to you which will require a long time for their recovery, you must be exceedingly careful how you take away blood from the general system, but must adopt in these cases local depletion; for if, as I have before remarked, you take away from the constitution too much of the vital fluid, nature will be unable to execute the usual processes for the restoration of the injured parts; the most disastrous consequences, in such cases, follow the indiscriminate employment of blood-letting; and there is not to be found, in the whole range of surgical practice, a greater error than this.

The second mode of relieving inflammation is by restoring the secretions: for whenever it occurs, at least in any violent degree, all the secretions are diminished or suppressed. The most important secretions are those of the liver, intestines, skin, and kidneys; and, when these cease to perform their proper functions, irritative fever is the consequence. A deficiency of secretion in the alimentary canal is the cause of a great many of the diseases to which human beings are subject. The internal surface of the intestines is lined with glands; the tube itself, on an average, is twenty-seven feet in length, and three inches in circumference; thus there are here about a thousand inches of surface, from which, in health, continual secretion proceeds. What then must the result be of allowing such an extensive surface to remain inactive? Of course, the production and continuance of irritation and fever! To excite the intestinal canal to action, therefore, should be one of our first

objects. This may be done by purgatives; and they afford relief in nearly the same manner as the abstraction of blood from the arm; for a pint of serum will frequently pass off with feculent matter, after taking a cathartic. Purgatives have likewise another good effect, independently of restoring the secretions from the intestinal tube, viz. that of carrying off whatever feculent matter may be lodged in the intestines; but I do not believe that much irritation is produced by the accumulation of fæces in comparison with that which takes place from a stoppage or deficiency of the secretions. I have met with several cases in which a vast quantity of fæces had collected, yet little constitutional irritation was produced; similar cases frequently come under the observation of accoucheurs. In one instance, which I met with, the pressure from the fæces was so violent that it produced ulceration into the vagina; yet the amazing quantity of feculent matter excited but little constitutional irritation. Some fluid formed a passage by the condensed mass, and was daily discharged; this, in a great measure, accounts for the absence of irritative fever.

That it is from the check to the secretions that irritative fever arises, is proved by what happens to children during dentition. They are sometimes put to bed quite well, but in the morning half the body is paralysed from the irritation of a tooth. The secretion from the intestines stops, fever is excited, which produces a hot and dry skin; but restore these secretions, by the administration of purgatives and antimonials, and the irritative fever soon subsides, although the paralysis will sometimes continue, with little alteration for life.

There is another mode in which purgatives produce a beneficial effect in inflammation, that of irritating the intestines. Blood is determined to them, and is therefore drawn from the part inflamed, upon the principle that two increased actions are with difficulty kept up in the body at the same time.

It is of no use to act on the intestines in inflammation, without also exciting the liver; therefore, give calomel with your saline medicines, but do not give saline alone; the best plan is to give calomel at night, and a saline in the morning. An excellent aperient for adults is one grain of calomel, with four of cathartic extract; or two of blue pill, with three of cathartic extract. Castor oil may also be recommended; and, as another safe opening medicine, you may prescribe infusion of senna, with Epsom salts. In children, calomel, with rhubarb, scammony, or antimony, may be ordered as aperients: and in addition to these means, the use of injections, and the warm bath, are the best means of restoring the secretions of the digestive organs.

An old Scotch physician, for whom I had a great respect, and whom

I frequently met in the city, used to say to me, as we were about to enter our patient's room together, "Weel Mister Cooper, we ha' only twa things to keep in meend, and they'll searve us for here and hereafter; one is auways to ha' the fear o' th' Lord before our een, that 'll do for hereafter; and t'other is to keep our booels auways open, and that 'll do for here."

The methods by which I preserve my own health are, temperance, early rising, and sponging the body every morning with cold water immediately after getting out of bed, a practice which I have adopted for thirty years; and though I go from the hot theatre into the squares of the hospital, in the severest winter nights, with merely silk stockings on my legs, yet I scarcely ever have a cold. Should it happen that I feel indisposed, my never-failing remedy is one grain of calomel combined with four of cathartic extract, which I take at night; with a basin of hot tea, about two hours before I rise the following morning, in order to excite a free perspiration, and my indisposition soon subsides.

The next secretion we should restore, for relieving irritation and inflammation, is that of the skin, for it rarely happens that a hard pulse continues with a free secretion from the surface of the body.

The best mode of producing perspiration is, by giving the antimonial powder with diluents, or Dover's powder; as this powder, however, is apt to increase costiveness, the antimonials are the best, and these should be combined with mercurials.

The other secretion, namely that of the kidneys, may be restored by giving diluents, squills, or acetate of potash.

Now, gentlemen, be assured it is not by restoring this or that secretion, which will relieve extensive inflammation; for it cannot be effected but by the complete restoration of them all.

There are some cases of inflammation where bleeding will not afford relief; this more frequently happens in inflammation of the testicles than in any other part; for these affections you must administer Dover's powder, combined with calomel.

There is another mode of subduing inflammation, namely, provoking in the stomach a constant nausea, by giving a solution of emetic tartar. I have seen this plan successfully practised on children in croup; calomel should be also occasionally administered.

In inflammation of old people you must bleed with great caution. I was requested to see an elderly lady in the country, having inflamed lungs; I ordered her to be bled—the bleeding was repeated, when her legs began to swell; I therefore prescribed the digitalis and the spir. æth. nitrici; it reduced the pulse, caused the absorption of the effused

fluid in the legs, and she rapidly recovered. This medicine reduced the inflammation, and at the same time increased power.

The means, therefore, which are employed to lessen or remove inflammation are those which restore the secretions, by opening the extremities of the arteries; and thus the heart is prevented from propelling a quantity of blood with violence to any particular part of the body.

LECTURE V.

TREATMENT OF CHRONIC INFLAMMATION.

The remedies employed in this affection must have a slow and gradual action on the secretions, you cannot take this disease by storm; and if your medicines are attended by violent actions, you will do harm instead of good. The principle on which this disease depends is the same as in acute inflammation, viz. the arrest of the secretions. Chronic inflammation is frequently produced through the influence of the mind: thus, long-continued grief will completely stop the secretion of bile; again, loss of appetite, from a deficient secretion of gastric juice, is often occasioned by anxiety of mind; and even an ulcerated state of the stomach has been produced by a long continuance of the same cause. But let what will cause the stoppage of the secretion, some enlargement will be the result; as swelling of the liver, of the testicles, or of the joints; the formation of common tumours, as the fatty, or those of a specific kind, as the fungous.

In diseases of a chronic kind, give calomel and opium; and I cannot point out to you a better example of their good effects than is observable in chronic inflammation of the iris. A person comes into the hospital with iritis; and he has a zone of red vessels round the cornea, on the sclerotic coat, and there are red or yellow spots on the iris; if the complaint has been violent, the spots are red, from their having become vascular. You give this patient five grains of calomel, and one grain of opium, twice a-day for a fortnight, and he generally gets well. Yet this disease was formerly considered incurable. If the patient be a female, or of a delicate constitution, then two or three grains of calomel will be found sufficient; and when the mouth becomes decidedly affected, you will perceive an alteration in the appearance of the iris, when you should lessen your dose; a profuse salivation is not necessary, and, if long continued, would aggravate rather than relieve the local disease.

The most common medicine, and probably as a general one the best that is administered in chronic inflammation, is Plummer's pill; it

acts at one and the same time on the secretions of the liver, intestines and skin, and if you can succeed in restoring these, the disease, if recent will soon disappear; the absorbent vessels are roused into a state of increased activity, and the effects of the chronic inflammation are removed.

Another excellent medicine for the cure of chronic complaints is the oxymuriate of mercury, combined with the compound decoction of sarsaparilla. In the hospitals we merely give it dissolved in rectified spirits of wine; about one-eighth of a grain, in half a pint of the decoction, to be taken in the course of a day; one-half in the morning, and the other in the evening; continue it as long as you think necessary, taking care to watch its effects on the gums; always keeping in mind, that mercury given to excess will tend to increase, rather than destroy constitutional irritation. As sarsaparilla seems to possess the power of lessening irritability, we frequently give it with mercury, in the way I have just mentioned; it is a medicine which often has a most extraordinary effect on opacities of the cornea, and may be prescribed, in even very bad cases, with the greatest prospect of success. A girl from Sheerness was in Guy's Hospital some time since, in whom the opacity was so great, that she was nearly blind; quite so in one eye: the usual remedies employed in similar cases were tried, without obtaining the least benefit; she was then recommended the compound decoction of sarsaparilla, with the oxymuriate of mercury, and in a short time she recovered her sight.

• The best alterative for the removal of chronic disorders in children, is one grain of the hydrarg. cum cretâ, and two or three grains of powdered rhubarb, mixed together, and given night and morning: this compound is exceedingly mild, and will have a particularly benign influence on the liver and intestines. One grain of oxymuriate of mercury, dissolved in an ounce of tincture of bark, and from ten to fifteen drops, according to the age of the child, being given twice a day, will likewise be found a very valuable medicine. It is said, that the mercury is decomposed by the bark; but whether it be so or not, it is attended with so many good effects, that I shall continue to prescribe it; and especially in those cases where there is enlargement of the mesenteric glands. Calomel and rhubarb, the hydr. cum cretâ, and soda, will also be found medicines of much power in the chronic diseases of children.

Lastly, as it is not advisable to give these little creatures mercury, if it can be avoided, a medicine, composed of two grains of rhubarb, and five grains of the carbonate of iron, given two or three timesa-day, •

will often render its employment unnecessary; this medicine acts as an aperient and powerful tonic.

The nature of inflammation I hope you all now thoroughly understand: recollect that the vessels of the part are in a dilated state, and the surrounding ones have an increased action.

I shall next speak of the

LOCAL TREATMENT OF INFLAMMATION.

Much has been said about the application of cold in these affections. People have been arguing about words rather than ideas, but it really is not worth while to attend to such fastidious, nonsensical objections, as have been started against this remedy. Though cold is not a positive agent, yet it is capable of affording great relief in inflammation—first, by lessening the size of the vessels—secondly, by lessening action, which it effects by diminishing nervous irritability. If cold be applied to the system generally, it has the power of lessening the frequency of the pulse in an extraordinary degree. I have tried this upon myself. I went out of my house one evening into the garden when warm, my pulse being 86; at the expiration of an hour it was 76; at the end of two hours was reduced to 65; and had not only lessened in quickness, but also in fulness. Cold will produce torpor, and even death.

A curious instance of this kind occurred near Halifax, in Nova Scotia: Dr. Scott had been dining a little way in the country with some friends, and they were on their return at night, when one of the party separated from the rest, saying to a companion, that he would frighten some of them by-and-by. However, they reached Halifax without seeing any thing more of him. At this the party became alarmed for his safety, and returned for the purpose of finding him. He was discovered behind a hillock of snow, in an erect position, but quite dead.

Another curious instance of this kind is related in Cook's Voyages, when some of the officers and crew of one of the ships were landing at Terra del Fuego. Dr. Solander, who was of the party, particularly cautioned them not to go to sleep; and said that it was exceedingly dangerous to do so in cold situations. It happened, however, that the Doctor was himself the first who became drowsy; it was with the greatest difficulty that his companions could keep him in motion: and it was only by the utmost perseverance that they succeeded in getting him back to the ship alive.

When cold is applied to an inflamed part, it lessens its nervous energy, and robs it of its heat; but cold must be severe indeed, if it brings the *internal* parts of the body below a temperature of 98 deg. In this coun-

try, in the winter, many of the *external* parts of the body vary in temperature from 20 to 30 deg.; thus a thermometer applied to the toes when they are cold, will be found to indicate 20 deg. of heat less than it would do, if applied to the calf of the leg. Cold, applied in excess, destroys life, by abstracting heat, without which the vital actions cannot be supported.

On the living body you may apply cold to a part until it actually becomes frozen. Mr. Cline and Mr. Sharp were once attending a patient who had strangulated hernia; to reduce which they applied ice inclosed in linen cloths, and this they continued for thirty-six hours: now as the ice dissolved, the water formed by it ran down upon the man's groin, and the inner side of his thigh, and the parts whereon this stream passed, became completely frozen; proper applications restored them to life; but inflammation and slight mortification succeeded: the hernia, however, was reduced, and the man eventually did well. In similar cases I advise you to apply ice in a bladder; and take care that you do not continue it too long.

It frequently happens in this country, during severe winters, that the lobes of the ears and tips of the noses of those who are much exposed to the weather will become frozen; they may be restored to life by rubbing them with snow.

One of the best lotions that can be applied to an inflamed part is composed of one ounce of rectified spirits of wine, and five ounces of water. Goulard water is much extolled for reducing inflammation and lessening pain; but when too long applied, or too strong, it has been known to destroy nervous irritability in too great a degree. Mr. Foster, of Guy's, saw a person in whom the upper eyelid became completely paralysed from its improper application.

In applying the spirit-of-wine lotion, let your cloths be thin, so that the spirit may combine with the heat of the part, and carry it off in the form of vapour; in other words, evaporation is produced, and it is in that way its good effects are evinced.

I do not recommend the application of ice to parts while in a state of inflammation; it irritates, and is apt to produce gangrene.

Some years since, when I was making a series of physiological experiments, I wished to ascertain what effects would be produced upon the pulse by the sudden application of severe cold, for which purpose I plunged my arm to the shoulder into snow; at the time of the immersion my pulse was 80, but immediately rose to 120; this result was contrary to all that I had ever been taught on the subject—the pulse sometimes did not rise so high as 120, not being more than 110, and was hard and wiry. The immersion in so great a degree of cold caused

great pain, and consequently was a source of irritation. This experiment led me into an examination of the effects of the application of the cold bath; I found, that when a person in health took a cold bath, who was unaccustomed to do so, that it produced irritation; but on the contrary, when a person in a state of irritation, or febrile heat, went into a cold bath, it tranquilized the nervous action, and exerted a beneficial influence.

At one time, I had injured my health by being too much in the dissecting-room, and was in the habit of discharging from my stomach a good deal of blood; a considerable degree of sympathetic fever was the consequence; in this condition I went into the country, for the benefit of a pure atmosphere, and there had frequent opportunities of noticing the influence of cold upon an irritable pulse, in my own person. Of an evening, when in the house, my pulse would be at 120, but upon going out into the cold air, it sunk in a very short time to 100, and by a long continuance in the cold, it became still less frequent. Thus, where there is great irritability of the nervous system, and where the heart is sending its blood through the different channels with accelerated motion, cold will prove invigorating, by destroying the first of these affections, and reducing the latter to the natural standard.

In a word, therefore, cold relieves inflammation when locally applied —by abstracting heat—by lessening the diameter of the blood-vessels— and by diminishing the action of the part, through lessening its nervous irritability.

The next mode of relieving inflammation is by the application of heat and moisture: this looks like contradiction, but it is not so. It would be a contradiction to apply heat alone, and its application would certainly do harm; but the reverse is the result, when united with moisture; for the two produce relaxation, open the pores, gives rise to perspiration, thereby removing congestion, and occasioning all the beneficial effects that would arise from the application of leeches. The sedative effects of heat and moisture are well exemplified by what happens when a person takes a warm bath; a man, for instance, with a pulse at 75, goes into water heated to 100 deg., his pulse soon rises to 100, presently he perspires freely, his pulse becomes less frequent, yet soft; great relaxation follows, and if he were not removed, he would absolutely die, so extensive is the exhaustion that it occasions. Here, then, is a direct proof of what heat and moisture can do, when they are applied generally; and, when used locally, their action on the parts is precisely the same.

Fomentations are ordered precisely with the same view, viz. to restore the secretions of the part, by which the tension of the vessels is removed,

and the pain much abated. Fomentations occasionally are medicated, being composed of camomile flowers, poppy-heads, &c., but I do not consider that these possess any advantage over mere water, at least where the surface of the skin is unbroken.

Poultices are likewise used upon the same principle; the kind of poultice is of little consequence, provided, as in the preceding case, the skin be entire.

The next method of relieving inflammation is by the application of leeches, which relieve upon the same principle as poultices and fomentations, viz. by abstracting from the part a portion of its fluids, and consequently lessening the pain and tension: after the leeches drop off, the bleeding must be encouraged; this may be done by bathing the part with warm water, and wiping it frequently with a warm sponge.

To some persons, and in some situations, however, the application of leeches is attended with very great inconvenience; as occasionally, for example, in inflammation of the testicles. We do not find this an inconvenience in the hospitals; but frequently, in private practice, we see persons in whom it is of the greatest consequence that a bleeding from these parts should be concealed. Now, as there is much mess, trouble, and consequent exposure, from an application of leeches, what we do in such cases is this: we request the person to stand before us, and, with a lancet, puncture some of the small veins on the front of the scrotum; in this manner, and with a little warm water, you abstract any portion of blood you wish; and what is of very great consequence, you stop it when you please; for, by placing the patient in a recumbent posture, and by applying some cold water to the punctures, the blood will immediately cease to flow. In this way, then, you may take blood from the scrotum, when the testicles are inflamed, with very little trouble, and without any exposure.

[The learned Lecturer here said, at the same time putting his hand upon one of the recently amputated stumps lying upon the table, that he had a few more remarks to make, but these would be on another subject: viz.—the occasional retraction of the skin of a stump, after amputation.

A surgeon, at Worthing, took off a boy's arm, pretty near the shoulder-joint; the stump healed kindly, and all was thought to be doing well: some months after, however, he complained of pain, and the skin retracted to such an extent, that the bone projected through it at least an inch; in this state, he came to town, and upon examining the part near the arm-pit, I put my finger upon a small tumour; this occasioned the boy to jump as though he had been electrified; I then performed the operation of amputation at the shoulder joint, and upon

examination, it was found that the tumour which had been touched before the operation, and produced the electric shock, was a large ganglion of nerves, and it had given rise to the excessive irritability of the stump, and the retraction of the skin.

Previously to the above case, a boy was sent to me, with a stump similar to the one I have just described, but in the leg; the ends of the bones were cut off, and the boy left the hospital apparently well; but soon after the arm case from Worthing had been operated upon, and the nature of the disease ascertained, this boy again returned, having his stump in a painful, irritable state, and the skin evidently retracted. Knowing now the cause of the mischief, I cut down upon, and took out the end of the posterior tibial nerve: the bad symptoms consequently disappeared, and the lad eventually recovered.

Going round the hospital the other day, I met with another case resembling the above, but, in point of irritability, much worse. At the particular request of the woman, I amputated—the nerves appeared to be enlarged, and had formed a ganglion partially resting on the extremity of the bone; this had produced such a degree of irritation, that no part of the stump could be touched without exciting a kind of electric shock; in fact, the woman appeared very much to resemble a sensitive plant.

How the nerves become longer than the bones in these cases does not admit of easy explanation.

LECTURE VI.

COUNTER-IRRITATION IN INFLAMMATION.

In the acute, as has already been explained to you, our object is to diminish vascular action; but in the chronic we endeavour to increase it. Thus, in long-continued discharges arising from relaxation, we employ stimulating lotions, for the purpose of restoring to the vessels their healthy power of contraction. Again, in sluggish, indolent ulcers, it is absolutely necessary to excite action; for which purpose we employ washes, either composed of calomel and lime-water, or the hydr. oxymur. and lime-water; the cupri sulphas is also an admirable remedy in these indolent sores. Gonorrhœa, as I have already shown to you, gives us an excellent illustration of the difference between acute inflammation and chronic, and the principles upon which your opposite treatment must be founded to insure a successful result. At first you diminish strength and action, and then stimulate, for the purpose of restoring them.

Whenever you apply stimulating lotions to indolent ulcers, you should always cover the parts with oiled silk, to prevent evaporation, by which cold would be produced, and the design with which it was applied frustrated. Your object here is to obtain heat and action; as oiled silk obstructs evaporation, it very materially contributes to create these; and, as the perspiration as well as the vapour from lotions condenses upon the inner surface of the oiled silk, it of course succeeds in keeping the part moist; and this is a very great advantage, as it enables you to remove your applications without disturbing the new skin. Now, where this covering is not used, the linen over the wound becomes dry, adheres to the newly-formed skin, and, consequently, when you take away one, the other must come with it: in this manner the restorative efforts of nature for twenty-four hours will often be defeated in a single minute.

The next method of treatment which we shall mention is that of counter-irritation.

The power of this remedy is very great, and its advantages numerous; but the chief benefit that results from its employment arises from its drawing off the blood from the neighbouring inflamed parts, whereby it checks the course of disease in important organs: thus, a blister at the nape of the neck, if early applied, will arrest an inflammation of the brain; a blister at the pit of the stomach will frequently overcome an inflammation of that viscus; a stimulating irritating lotion applied to the scrotum will often cure an inflammation of the testicle. But counter-irritation, carried to excess, will do harm; you must, therefore, be particularly cautious as to the manner in which you use it. In parts that have no immediate connexion, it is really astonishing to observe its effects. In inflammation of the lungs, a blister applied upon the chest (parts between which there is no direct communication), will soon stop the disease, and be to the patient the principal cause of recovery. Blisters, likewise, applied to the front of the body, as on the abdomen, are extremely useful for the removal of inflammations of the liver, intestines, &c.

Blisters are more generally used by surgeons for exciting counter-irritation than any other application. Issues and setons are also occasionally adopted. I again caution you against exciting such a degree of irritation as would affect the whole system: if you were to allow this to happen, you would aggravate the original disease; it must therefore be limited, and kept within proper bounds. Sometimes, after the blister has been removed, it may be deemed prudent to keep the wound open; this you can accomplish by removing the loose cuticle, and by dressing the sore with savine ointment.

Another mode of producing counter-irritation is by the application of tartarized antimony made into an ointment. This is a very excellent method, and is now very generally adopted. You must be careful, however, on what surfaces you apply it, if you intend to excite irritation in a great degree; as it is apt, permanently, to disfigure the skin. I saw a young lady who had used it on the arm for a chronic inflammation of the elbow joint. She was offended with her medical attendants for having recommended its employment, as it left a scar near the elbow which has since obliged her to wear long sleeves. Such a defect you would not like to see in your sister or friend; therefore, it is nothing more than right that you should endeavour to obviate its occurrence; and this you may always do by proper attention.

The next circumstance to be attended to in the treatment of inflammation is position. Medical men do not consider the human body as an hydraulic machine; nor indeed is it so: but still the fluids of the body are, in some measure, governed by the laws of gravity. Look at the operation that I spoke of in the last lecture, for relieving inflammation of the testicle. If you puncture the veins in front of the scrotum, and if the patient be in the erect position, blood will freely flow; but put him in a recumbent position, the stream will immediately cease; though when the body is thus placed, the power of the heart is greater than when in the erect position.

If, during the ensuing winter, I should be called to any of you having inflammation in the hand, arising from punctures inflicted while dissecting, I should immediately direct you to get an inclined plane made, upon which I should order you to rest your hand as long as the inflammation was at all violent.

It is equally necessary to attend to position in inflammation of the leg. I must give you an example; I was sent for, to see a gentleman farmer in the neighbourhood of Rayleigh, in Essex, who for a long time had been subject to a very severe inflammation in both his legs; they were exceedingly red and very much swollen, in a state threatening gangrene; the constitutional irritation was very great, and the tongue covered with a brown fur. I found him with his legs in a tub of water; I took out one of them, and it smoked excessively; I saw there was no time to be lost, had him immediately placed upon a sofa, and contrived to rest his legs upon the end of the sofa; consequently they were raised considerably higher than his body; the vessels soon began to unload themselves, and the skin, in a short time, was evidently less red than when taken out of the water. I then applied flannels wrung out of warm water; these soon produced a very considerable perspiration, by which the cellular membrane became unloaded, the

swelling much less, and the pain materially abated. He gradually recovered, and in six weeks was enabled to ride a considerable distance to market.

The completest tyro in surgery ought to know, that it would be folly to attempt to cure extensive inflammation in a limb, if it were allowed to continue in a depending position.

The next circumstance to be attended to in the treatment of inflammation is rest; the necessity of which must be well known to you, as all of you must have observed that exercise increases the action of the heart, and, consequently, must be injurious in inflammation. To obtain rest for an inflamed joint is one of our grand principles in the treatment, and no good can be done without it: it is curious to observe how nature herself directs this; for where a joint is diseased, the muscles which act upon that joint have lost their power: thus, if a man has an inflammation of the wrist, and you put your hand into his and desire him to squeeze it, you find that he cannot do so, or that the attempt is exceedingly feeble. In inflammations of the joints of the lower extremities, the muscles of the part in like manner lose their vigour.

Indurations frequently remain after inflammation has entirely ceased; these are to be got rid of by diminishing the circulation of the part, and producing absorption by the following methods:—

Pressure has the power of exciting the action of the absorbents in an extraordinary degree; and you may produce it either by the use of rollers or strapping.

Electricity too, is attended with similar effects: it acts strongly on the absorbent system.

Mercury, likewise, does the same; and, speaking generally, more decidedly so than either of the other remedies I have mentioned.

When a man dies in our foul wards, for example, in a state of salivation, we find that the alveolar processes which contained the teeth have been in a great measure absorbed.

Friction has of late years, got into great repute, for the cure of indurated and stiffened joints, occasioned by inflammation; it was first recommended by the late Mr. Grosvenor, of Oxford, a man of strong mind, and who possessed a great share of common sense. This remedy was his hobby; and, like all other hobbies, it occasionally carried its rider into the mire; for Mr. Grosvenor sometimes would recommend friction before the acute inflammation had terminated, consequently it was productive of mischief rather than benefit; in many instances, however, where judiciously employed, the most beneficial results have been obtained.

Case.—A gentleman in the neighbourhood of Nottingham, when

shooting, received a severe injury to his knee; after the violence of the first inflammatory symptoms had terminated, there remained considerable swelling, stiffness, and induration; for these he was attended by Mr. Attenborough, an eminent surgeon, of Nottingham; as the gentleman did not get better, Mr. Attenborough sent him to town, and here he for some time continued under my care and that of a physician; still the joint remained in the same state, and the means used were inadequate to afford relief. I advised him to go to Oxford, and consult Mr. Grosvenor. This he did; and as soon as Mr. Grosvenor saw him, and heard that his limb had been kept quiet, he told him to walk to the bottom of Christ Church Meadow, and then return and dine, which he really did. Friction was used in this case with the greatest success, for, within six weeks after he went to Oxford, he called upon me in town, quite recovered, and thanked me for recommending him to Mr. Grosvenor.

Friction accelerates circulation and absorption; and the way in which Mr. Grosvenor recommends it to be done was, by applying both hands to the joints, at the same time alternately moving them up and down.

The late Mr. Hey, of Leeds, a man whose mind was free from every paltry prejudice, most eminent in his profession, and ever anxious for truth, had a son who met with a serious injury to his ankle-joint; after trying all that he could to relieve it, he sent him to Mr. Grosvenor; and under his care, by the judicious application of friction, the actions of the joint were completely restored.

ADHESIVE INFLAMMATION.

For a knowledge of this, we are indebted to that bright luminary of our profession, the late Mr. John Hunter, a man who was abused, reviled, and laughed at, when living, by the very persons who, now that they cannot any longer injure him, are ever loading his name with every species of commendation and praise.

Adhesive inflammation is the process by which divided parts become united.

Inflammation has a disposition to separate the blood into more parts than usually occur when drawn from a person in health. In health, it merely separates into serum and red particles; but, when in a state of inflammation, if, after being drawn, it be allowed to remain undisturbed, it will separate into serum, red particles, and fibrin. The red particles, together with some fibrin, will be found at the bottom of the vessel; the fibrin immediately on the top of the red particles, forming what is called the buff of the blood: and the serum will occupy the surrounding space. The fibrin, having lost the red particles, contracts with

great firmness, and when taken out almost resembles a piece of leather. It has been said, that the adhesive matter is albumen; but it has been proved not to be so. Doctor Bostock, who was for several years at Guy's Hospital, took great pains to investigate its nature, and published several papers on the subject in the *Medico-Chirurgical Transactions:* he named it fibrin. Mr. Hunter called it coagulable lymph; this certainly was not a good term to be applied to such a substance, for lymph is expressive of, and relates to, water; whereas, fibrin is not only a solid, but an exceedingly firm one.

Some surfaces of the body are serous, while others are mucous. The cellular membrane is one of the former, and usually exhales a fluid somewhat resembling serum, but containing much less albumen. This membrane is very liable to the adhesive inflammation. The vessels that usually secrete the fluid just mentioned, when the part is inflamed, pour out fibrin, which, becoming coagulated, produces the hardness which we usually find in inflamed parts.

The peritoneum, a membrane which doubly encloses the intestines, is a serous surface, often affected by the adhesive inflammation, which occasions the two surfaces of this membrane to be firmly glued together.

But the part of all others the most subject to this kind of inflammation is the pleura, and we scarcely ever open a body without finding upon its surface many unnatural adhesions.

The heart, in like manner, is often glued to the pericardium, so that the space usually found between the two portions of membrane is obliterated.

Thus, then, it will be seen that the serous membranes readily take on the adhesive inflammation, by which they become permanently attached to each other, or to the adjacent parts; this is a most beautiful and wise provision of nature, for if the membranes of cavities, such as the pleura and peritoneum, instead of the adhesive, were to receive and support the suppurative inflammation, effusion and death would be the inevitable consequences.

The mucous membranes, as the urethra, for example, are effected by the suppurative inflammation. This is another of nature's benevolent and wise ordinances; for, had they been subject to the adhesive, the outlets of our bodies would have become closed, and life destroyed. Sometimes where inflammation of a mucous membrane is exceedingly violent, it passes into the adhesive inflammation, glues the parts together, and, unless relieved by an operation, would end in the destruction of life. I can relate to you an example of this: there was brought to me from Exeter 'Change a kangaroo for dissection. His bed of straw had caught fire, but it was very soon extinguished; and the proprietor,

knowing that he had not been severely burned, was at a loss to account for his death. Upon examination, his bladder was filled with urine, which was retained in consequence of the closure of the urethra by the adhesive inflammation; the penis having been severely injured by the fire, the inflammation which followed was violent, and passed at once into the adhesive form. Thus you may perceive that common gonorrhœa would destroy life, if it were not so arranged by nature that mucous membranes are more readily influenced by the suppurative than by adhesive inflammation.

LECTURE VII.

APPEARANCES UNDER ADHESIVE INFLAMMATION.

When an incision is made into a part affected with adhesive inflammation—into the cellular membrane, for instance—a quantity of serum is found effused round the part, and in the part itself a yellow and semitransparent substance, having the appearance of jelly, though widely different from it in composition. The best opportunity that you can have of witnessing the adhesive inflammation is on the skin under the irritation of a blister; the blister produces the same effects as those produced in the operation for hydrocele. Let a blister be applied for twenty-four hours, till the cuticle is raised; then make an incision into the vesicles, and a quantity of serum will escape. Here, perhaps, your observation may terminate; but examine the surface, and you will find on it a yellow substance, which will exist in a greater or less degree, according to the length of time the blister has been applied, on its severity, and on the irritability of the skin; but, generally speaking, under the application of a blister, adhesive matter is thrown out as under adhesive inflammation.

For those who are anxious to know the time required before the adhesive inflammation commences, it may be proper to state, that it is different, according to the structure of the part and nature of the constitution. In the cavity of the abdomen, the intestines will be glued together in nineteen hours after the adhesive inflammation has begun. Now I mention nineteen hours particularly, because I have seen it produced after that time in cases of gun-shot wounds. It may be in the recollection of some of you, that a Mr. Blight was shot by a man called Patch, in the neighbourhood of Deptford: the ball traversed the abdomen. I was called to this case, and Mr. Blight died in nineteen hours after he had received the injury. Here I had an opportunity of seeing what I have just mentioned; the intestines were glued to each

other, and to the peritoneum; the peritoneal surface had quantities of adhesive matter on it, and was firmly united to the surrounding intestines. On the surfaces of wounds the process of adhesion takes place rapidly; for if a piece of lint be applied to a newly-made wound, in twelve hours it will be glued to its surface; in a dog the adhesive process commences in six hours.

Adhesive matter, when effused on a thin membrane, coagulates into a net-work, assuming the character of cellular membrane.

When adhesive matter has been formed, the blood-vessels soon enter it, and within a short time it becomes organized; the vasa vasorum are elongated by the force of the circulation; they enter the newly-formed substance, and send throughout it minute ramifications. On cutting into adhesive matter within twenty-four hours after it has been deposited, small bloody spots may be seen, which mark the future situation of the vessels which nourish it; but it is not till ten days after it has been formed that adhesive matter becomes completely organized; for you will find that a fine injection would not enter adhesive matter sooner than the tenth or eleventh day after its formation. When vessels elongate, they have not the character of arteries; in general they take a serpentine or tortuous course.

Some thought, at one time, and I believe Mr. Hunter was one of this opinion, that the vessels originated in the newly-formed substance; but they are formed by the elongation of the vasa vasorum of the surrounding arteries, which become dilated, lengthened, and serpentine: and the degree of vascularity will be in proportion to that of the part subjected to the adhesive inflammation. In tendons, for instance, it will be much less than in muscles.

This process is of the greatest possible consequence in surgery. It ought, therefore, to command much of your attention; and it will be unfortunate for you if you do not understand it. Without this process no operation could be attended with success; its absence, even after bleeding, would destroy life. Bear this principle in mind, then, gentlemen—always endeavour to effect union by adhesion.

Suppose you were called to a compound fracture, what would you do? Endeavour, certainly, by bringing the parts together, to make it a simple one. Within these few days you have had an opportunity of witnessing the fatal consequences of hemorrhage in a case of compound fracture; if the adhesive process had taken place, hemorrhage would have been prevented, constitutional irritation kept off, and recovery, in all probability, rendered sure. It is the same in formidable operations; the Cæsarean operation, which consists in making an incision in the course of the linea alba, for the purpose of extracting a fœtus from the

womb, is not dangerous, if the adhesive process take place; now and then, from hemorrhage and exhaustion, it proves serious; but in most cases, the danger is slight, if union by adhesion be procured. To exemplify this by the operation for cataract: in this operation a wound is made in the eye—more than half of the cornea is cut; if the adhesive process take place within twelve hours, the flaps begin to adhere, and in twenty-four they are consolidated. Suppose, on the contrary, they do not—violent inflammation supervenes, and the result is destruction to the eye of the patient; the success of the operation depends then, in this instance, on the adhesive process. In a person who had been in ill health, the inflammation might be too weak, and in another case it might be too strong; suppuration would be the consequence in both instances; the same effect results in the two cases, though produced by very different causes. Again, in the operation for strangulated hernia, an opening is made into the hernial sac, which communicates with the cavity of the abdomen; and, if the parts are not afterwards united by the adhesive process, the patient dies. In the operation for aneurism, it is adhesive inflammation which saves life; a ligature is applied to the artery, a coagulum of blood forms, the adhesive process commences, fibrin is poured out, and the internal coats of the artery are glued together; but for this, when the ligature gave way, hemorrhage would ensue. In the operation for the radical cure of hydrocele, we have a beautiful opportunity of witnessing the effects of adhesive inflammation. After the water has been evacuated, a stimulating injection being thrown into the cavity excites upon its sides an irritation; inflammation is set up, adhesive matter thrown out, the internal surface of the cavity generally becomes permanently united, and thus a radical cure is effected.

The treatment of a stump after amputation will best illustrate this subject. In amputating a limb, your object is first to preserve sufficient integuments, and not muscles, for if muscular fibres are preserved with the integuments, they will contract, and retraction of the skin covering the stump will be the result. When the limb has been removed, you will apply ligatures to the bleeding vessels: now I would not advise you to tie every small vessel; ligatures on the principal vessels are quite sufficient, and the fewer applied the better, for though it is desirable to prevent disturbance of the limb afterwards, yet, by waiting a short time after the operation, the smaller arteries will generally stop.

The ligatures themselves should be small, and consist of fine silk, for nothing is so bad in operations as the application of coarse ligatures, excepting perhaps in cases where ossification of the arteries has taken

place, when it would be justifiable; with this exception only, it is the worst possible surgery to apply thick ligatures to arteries; and if a surgeon were to do it, he would understand nothing of his profession; the thinner the ligatures are, then, the better.

Now there are two reasons why thin ligatures are preferable—1st, because they are less liable to escape; 2d, they divide the internal coats of the arteries more effectually: when you use a very fine ligature, the internal coats will be completely divided, and the external will remain entire. My friend, Dr. Jones, has published an excellent work on the natural means by which arteries unite in cases where ligatures are applied; and first he states the fact of the internal coats of the artery being divided by the application of fine ligatures. Thick ligatures also prevent the wounds from healing so rapidly as thin ones. After the vessels have been secured, the sponge should be applied, and all coagula of blood removed, as this is very essential to the union of the part; blood is not the means but the prevention of union in such cases, for unless it be taken away, the adhesive inflammation will not go on. There is one instance in which blood favours the process of adhesion, and that is in the application of a ligature on an artery; with this exception only, the opinion of blood favouring the process of adhesion is to be banished from your minds, for there are but two modes by which union can be effected, viz. by adhesion, and by granulation; therefore remove all clots of blood, which will only act as extraneous bodies and keep up irritation. You are to cut off one end of the ligature close to the vessel, and let the other hang out of the wound: it has been recommended to cut off both ends of the ligature close to the vessels; this plan, has, however, been already given up.

This was determined by Mr. Hunter, in the first operation he performed for aneurism on the trunk of the artery above the tumour, instead of on the aneurism itself; for in that instance he cut the ligature close to the knot, and copious suppuration afterwards took place. Ligatures can only be removed from the vessels by suppuration or absorption (in the latter case they must be first dissolved and then removed by the absorbents); and conceiving that if a ligature, composed of a substance easily soluble, were applied to a vessel, and cut close to the knot, it might be dissolved, and then absorbed, I applied a catgut one to the femoral artery of an old man, whom I operated on for popliteal aneurism, and cut it close to the vessel; this case turned out well, for adhesion followed and suppuration did not ensue. Although successful here, I have tried it in several cases since, and have failed in all, suppuration always coming on afterwards. I applied a silk ligature to the carotid of a dog on one side, and a catgut one to the carotid on the op-

posite side: upon killing the dog some days afterwards, I found the second ligature (catgut) buried in a cyst, and that the first advanced by the process to the side of the larynx. Experiment and observation show, then, that it is better to cut one end of the ligature off, and to leave the other hanging from the mouth of the wound, to be removed when the ulcerative process is completed, which is from ten to fourteen days. Dr. Veitch, I believe, first advised the removal of half the ligature.

After amputation, having disposed your ligatures in a line with each other, and leaving them to hang out at the most depending part of the wound, you will, if the limb be removed above the elbow or knee, apply a bandage, to prevent retraction of the muscles and extensive suppuration. I have seldom succeeded with my stumps above the knee when I have not used a roller; it is better to apply a roller in such cases, for the muscles will then be glued together, and form one consolidated mass. Having applied a roller, and brought the integuments together, I merely put three strips of adhesive plaster over the wound, and one round the stump, to keep the ends of the plaster in their place. It is curious to see the difference between the mode of dressing stumps now, and that adopted a few years ago; the old practice was, after the adhesive plaster had been applied, to put some lint, then plaster again, after that tow, and, lastly, over the whole, a cap of flannel. If a surgeon were to do this now, he would be laughed out of the operating theatre, and very deservedly too, because he would prevent the success of the adhesive process by unduly heating the limb. All that is necessary to do, is to apply three strips of adhesive plaster over the wound, and one circular piece; if the weather be hot, to apply the spirit of wine and water lotion, and if it be cool to keep the limb quiet. The object is to keep down the inflammation to the adhesive stage; if it goes beyond this, suppuration will be the result.

The last circumstance necessary to mention, is the impropriety of dressing the stump too early; a person anxious to see whether a union has taken place, removes the plasters in two or three days: he who does this overlooks the object in view, and must be shocked, when he looks at the stump, to see, that by the early removal of the plasters, he has destroyed all that nature had done. All you ought to do is, in four days after the operation, to remove one strip of plaster, for the purpose of letting out any matter which might have collected. In six or eight days after the operation, it will be proper to dress the stump; but to do it before would be absurd.

The treatment which is applicable to stumps, is proper also for common wounds.

The adhesive process is useful in the formation of cysts. Balls

encysted have been known to remain in the body for many years. Morgagni, if I recollect aright, mentions a case where a ball lodged in a cyst in the lungs for a considerable space of time. If the ball be not encysted, it travels, and absorption of the parts through which it passes takes place. A few days ago, a gentleman called on me, who had formerly received a wound above the zygomatic arch from a ball; he now had a swelling on the side of his face. I asked him whether he thought it contained the ball; to which he replied, no: upon cutting on it, however, I found it was the ball by which he had been wounded some years before. It had travelled beneath the zygoma to the middle of the cheek, on the surface of the parotid gland, from whence I removed it. Perhaps it was assisted in its course by the action of the temporal muscle. I saw a boy, who had been attending a target at which some volunteers had been firing; he thought himself safe at a distance of thirteen yards; he was mistaken, however, for one of them shot him in the collar-bone. Some months after, he came to Guy's Hospital, and I removed the ball from about the middle of the upper arm. Thus the ball, by its weight and pressure, had occasioned suppuration and ulceration, which had enabled it to travel to the situation from whence I extracted it.

Another very important use of adhesive inflammation is that of its dividing cavities into distinct parts, by which means it fixes a boundary to the suppurative process; thus it will divide the cavity of the abdomen into two, by throwing out adhesive matter on the surface of the colon, by which it becomes glued to the peritoneum. In abscesses, a cyst is formed by the adhesive process round the matter, which prevents its escape into the surrounding cellular tissue.

The advantage of adhesive inflammation is admirably shown in wounds of the joints. Immediately on the knee joint being opened, the synovia escapes, the person feels faint, looks pale, and the constitution appears to have received a severe shock. The wound endangers the loss of the limb and the patient's life, if bad treatment be adopted. If a poultice be applied to such a wound, or fomentations used, a suppurative inflammation will take place on the synovial surfaces; the cartilages become absorbed, and the bones ulcerated; a profuse discharge ensues, the constitution becomes extremely irritated; chills, succeeded by burning heat and profuse perspiration, frequently follow each other, and a person, just before in good health, is precipitated into a state of extreme debility. Sometimes the joint, after weeks, or even months have elapsed, gradually heals by granulation, with its motion either entirely gone or greatly impeded.

If, on the contrary, the practitioner brings the edges of the wound immediately together, and attempts union by the first intention, the

patient generally escapes from local or constitutional irritation. The edges of the wound should be brought together by a fine suture—a plan, to which some surgeons object; but when the wound is direct into the joint, it affords an additional security to the patient, as the escape of the synovia has a constant tendency to prevent adhesion, and to separate the plaster. The suture should penetrate the skin, the ligament being carefully avoided. A piece of lint wetted in the patient's blood is to be put over the wound, and over this strips of adhesive plaster. Linen cloths are to be laid over these, and be kept constantly wet with the liq. plumb. acet., and spirit vini; a splint is to be placed behind the joint, to secure perfect rest.

In the operation for hare-lip, it is by the adhesive inflammation the wound becomes united, and the deformity removed.

The effusion of adhesive matter, by unloading the vessels of the part, has the effect of reducing the inflammation, so that the process generally terminates as soon as this effect is produced.

LECTURE VIII.

ON SUPPURATION.

SUPPURATION is the formation of purulent matter from the secreting orifices of the blood-vessels, which matter is named pus.

It is formed in cavities produced in the body by a process of absorption, as in abscesses; it is found also as a secreted fluid on the surfaces of membranes, or upon granulating surfaces.

The formation of matter is often attended with severe constitutional irritation; there are rigors succeeded by heat. When, therefore, you see a person who has had severe inflammation, and you wish to know if suppuration has taken place, you ask him if he has had a cold shivering; for this is generally the forerunner of the purulent secretion. If the inflammation be extensive, or seated in any vital organ, the constitutional disturbance will be very severe, and followed by a powerful reaction. Whilst the rigor continues, the blood collects about the larger vessels in the neighbourhood of the heart, and in the heart itself; at length this organ becomes stimulated to action, and sends the blood with considerable force to all parts of the body, but more particularly to that part where pus is about to be secreted. A rigor, therefore, is merely a constitutional effort towards accomplishing the object that nature has in view. When pus is easily produced, as upon mucous surfaces, there is no rigor whatever.

When there is an attempt to produce matter, there is an unusual sen-

sation of uneasiness in the part, together with a blush on the skin, easily recognised, by those acquainted with the subject, as a sure indication that pus either has, or is about to be formed. In the adhesive inflammation, the pain is an acute thrilling one; but here it is more dull, and is likewise pulsatory or throbbing. As this continues, the tumour becomes soft in the middle, but remains hard at the sides; the centre of the swelling points, as it is termed; and, upon pressing the part at this period, fluctuation will be evident.

The next thing to be observed, is an effusion of serum beneath the cuticle, which separates it from the cutis; it becomes gradually distended, and then bursts, leaving the cutis exposed. Ulceration sometimes takes place on the surface of the skin, whilst the same process is going on internally, so as to facilitate the discharge of the matter; generally speaking, however, the ulcerative process is continued entirely from within. These are the common appearances produced by the process of suppurative inflammation. Pus is generally formed in from seven to fourteen days; but the time required for this process will very much depend on the constitution of the patient, and the structure of the part in which the inflammation is seated.

Some parts more readily run into the adhesive, others into the suppurative inflammation; the pleura, pericardium, peritoneum, &c., are subject to the former; while the urethra, vagina, lachrymal duct, trachea, bronchia, nasal passages, &c., are liable to the latter: serous surfaces, therefore, are affected by the adhesive inflammation, and mucous surfaces by the suppurative. The reason why the inflammation affecting the two structures produces different results appears to be this: the vessels of serous surfaces are too small to permit the transmission of the particles which pus contains: but when the inflammation becomes violent or long continued, then the vessels dilate, and purulent matter is formed, even on serous surfaces. Some experiments have been made, which tend to prove that this theory is correct; for it has been found that injections which are sufficiently fine to pass freely into the vessels of mucous surfaces, will not penetrate in the slightest degree into the vessels of serous surfaces. I shall presently explain this to you more particularly.

In one of the preceding lectures, it was mentioned, that dangerous consequences sometimes arose from passing bougies in very irritable habits; the danger in these cases depends upon the formation of the adhesive inflammation, instead of the suppurative. The duct or canal leading from the inner angle of the eye, and which conveys the tears into the nose, is mucous, and, therefore, when inflamed, usually suppurates; consequently is only obstructed for a short period; and even this obstruction can be relieved at intervals, by pressing the finger upon the

skin immediately under the eye, by the side of the nose, by which means the collected matter will be forced out at the puncta situated in the under eye-lid. Should the inflammation, however, be of the adhesive kind, then an obstruction will be formed that can only be relieved by an operation. This complaint is named fistula lachrymalis. The tears now pass over the cheek, and not into the nose, because adhesive matter has glued the sid·s of the tube together. The operation for the cure of this is simple, and will be explained to you hereafter.

The membrane covering the internal surface of the trachea is mucous, and, therefore, when inflamed, usually suppurates; but in croup large quantities of adhesive matter are thrown out, so as very frequently to occasion death. The coagulable matter adheres so firmly, that it cannot be disengaged by the ordinary efforts of expectoration; at last, from its increase, it fills the trachea, and suffocation is of course the result. Nature has, as we before remarked, wisely ordained, that the various outlets of the body should commonly be liable to the suppurative inflammation; and if this were not the case, life would be very much shortened indeed.

Arteries and veins, when inflamed, generally pass into the adhesive inflammation. It occasionally happens, however, that their inner coats suppurate: and I have more than once known persons die from the irritation thus excited.

Case.—A man in Guy's Hospital had a leg ren ed. In a day or two he became delirious, and shortly after died. When examined, no particular disease in his body was found; but the suppur·tive process had been set up in the arteries, and this case caused the fatal catastrophe. Similar events would follow the operations for aneurism, if the adhesive inflammation did not supervene instead of the suppurative; for matter would form above the ligature, and, mixing with the blood, would destroy life. Suppurative inflammation of the veins has often been known to come on after bleeding, and occasion death. Upon dissection, in these cases, matter has been found in the heart, mixed with the blood.

Wounds made into joints are always dangerous; this has been said to arise from the admission of air. No name can be given to such a declaration but ignorant nonsense; for air has no power whatever of producing inflammation in these cavities, and he who says otherwise knows nothing about it; the synovial membrane lining joints is a mucous membrane and, therefore, quickly passes into the suppurative inflammation, which circumstance renders an injury done to these parts exceedingly difficult to cure; besides, the internal surfaces of joints are much more extensive than you would imagine: you would be astonished, if you saw the internal surface of the knee-joint spread out on this table. Joints are also composed of materials having in themselves.

very little restorative power, being formed of ligament, cartilage, and bone, parts that soon inflame, suppurate, and become absorbed. Whenever, therefore, you are called to accidents of joints, and where openings have been made into them, these you should endeavour to close as speedily as possible. Likewise, when you have to remove from these cavities extraneous bodies, you should draw the skin forcibly on one side, and then cut through it down upon the substance. If the operation be performed in this manner, the skin being left to itself will return to its natural situation; consequently the cut in the integuments and that in the capsular ligament will not be opposite each other, and union by the first intention will be much more likely to ensue.

In the treatment of wounds of the thecæ as much caution is necessary as in those of the joints—their structure, in fact, nearly resembles the capsular ligament and synovial membrane; an injury here causes, in a very short time, great pain and inflammation, and much constitutional irritation and fever. If matter form, it becomes deposited, or locked up, as it were, in a tendinous bag; and so great is the irritation which it sometimes occasions, that it has been known to destroy life in sixty hours.

Case.—A young gentleman from the West Indies, of great professional merit, of the name of Alcock, informed me one Monday night, after a surgical lecture, that he had, in the course of that day, punctured the theca in some part of his hand—as he was living at the time in the house of the late Dr. Haighton, I advised him to show it to the Doctor (who was an exceedingly clever man); he did so;—on the following day he suffered greatly from constitutional irritation, and on the Wednesday morning died: his system was certainly a very irritable one, and that accounts, in a great measure, for so speedy a dissolution. When, therefore, you suspect matter to have formed in these parts, let the quantity be ever so small, you ought to discharge it. It is surrounded by a structure, through which, without assistance, it cannot pass; therefore nature requires your assistance. At the commencement of inflammation in these injuries, your treatment should be prompt—apply leeches and lotions, and give your patient calomel and opium—these measures, judiciously used, will often check the progress of the disease, and in a short time completely remove it.

Formerly it was the opinion that matter was produced by a dissolution of the solids; but this opinion is now exploded, for we have numerous facts to prove that it is not true; in the urethra, for example, you all know that matter will be formed on its surface for months; and is the urethra destroyed by it? No, but on the contrary, is thicker than it was before the discharge existed; and, upon examination of this part

after death, no ulcers have been discovered, even if the matter had been flowing for months: the ancients thought that gonorrhœa arose from ulceration of the urethra; this opinion, therefore, is also found to be wrong. Again, in large cavities, such as the chest and abdomen, an immense quantity of matter may be secreted, and yet, after death, no erosion of the solids will be discoverable; but the membranes lining their cavities, namely, the pleura and peritoneum, will be found very materially thickened. I remember, when there was a very warm discussion on this subject, the disputants used to put pieces of raw meat upon the surfaces of ulcers, and after suffering them to remain for some time, would then carefully weigh them for the purpose of ascertaining the quantity of substance lost.

Pus is not a fluid produced by the dissolution of the solids; it is secreted from the blood-vessels, but not until they have been acted upon by inflammation. The effects produced by the application of a blister exemplify this; when the cuticle is raised, first serum and fibrin are thrown out; remove the cuticle and apply upon the raw skin a piece of glass; at first no matter is to be seen, but in a few minutes you will observe it collect and adhere to the under side of the glass; bile, urine, and, in fact, all the fluids, are secreted from the blood, but in each instance the action of the vessels is different.

Pus is composed of serum, and particles swimming in that serum; there may be also, a little coagulable matter in the serum: this, however, is hypothesis; that fibrin is poured out from the vessels in adhesive inflammation is not hypothesis, but, on the contrary, a well-ascertained fact. The globules of pus are the same as the globules of the blood, but the action of the vessels appears to take away their colour; their form is the same; size the same: these globules also resemble those that are contained in mucus.

Pus, when healthy, is a bland fluid, and will not irritate the parts that produce it. If poured into water, it sinks, because its specific gravity is greater than that of water. It appears to be composed of the constituent parts of the blood, slightly changed in their character by inflammation. Healthy pus, I say, does not irritate parts; but surgeons formerly thought otherwise, and therefore used to cover the surfaces of wounds with sponge, for the purpose of sucking up the matter as fast as it was generated. When, however, pus is unhealthy, having mixed with it too large a portion of serum, or when bloody, then in passing over the skin it will irritate and occasion excoriation.

This matter does not appear prone to putrefaction in the healthy constitution. but in some persons it will, in a very short time, become inconceivably putrid and fetid.

Case.—A butcher, when getting out of a hay-loft, missed his footing, and in trying to save himself from a fall, had the misfortune to hitch his hand upon a hook, upon which the poor fellow hung like one of his own sheep. Eight days after the accident, he was brought to Guy's Hospital; the next day his hand was opened, and the matter discharged was most horribly offensive; on the following day he died. Whenever the matter of an abscess becomes offensive, you should regard it as a bad symptom;—such cases are troublesome, and often terminate fatally.

When matter of a poisonous kind, the result of a specific inflammation, is applied to the surface of the body, it irritates, occasions inflammation and suppuration, and this newly-formed matter is of exactly the same description as that which produced it; at least the poisonous quality is retained undiminished in virulence. This is illustrated by the discharge of gonorrhœa, chancre, small-pox, &c. To enumerate all the instances would fatigue you.

But these instances must be considered as additional arguments in favour of pus being a secretion.

Suppuration is not without its advantages: in two points of view it is very important.

1st. By forming a covering to granulating surfaces, thereby preventing the granulations from becoming dry through the influence of the air; for, if they were not kept moist they could not push forward. 2dly. The suppurative process is the means resorted to by nature for effecting the escape of extraneous bodies: thus a ball, by its pressure, gives rise to suppuration, and ultimately is discharged, excepting in such cases as we have before described, where it remains encased by adhesive matter.

Some wounds are very troublesome, and, do what we will, we cannot get them to heal. Now and then it happens, if you discontinue your dressings to such sores, and let their surfaces remain exposed to the air, incrustations or scabs will form; under these pus will be secreted, which, by keeping the granulations constantly moist, will often cause ulcers of this description to heal, when all artificial attempts have been completely unsuccessful.

When the constitution has been long accustomed to a discharge from an ulcer, some caution is requisite when healing it; for, if done too suddenly, hectic or apoplectic symptoms are very apt to supervene. Ancient surgeons observed these; to obviate which they were in the habit of making issues in other parts of the body at the time of healing old sores. Quantities of matter, constantly discharging for a considerable period, inevitably act on the constitution as sources of depletion; and which, if suddenly discontinued, we may reasonably imagine would

produce the symptoms before stated. There is no necessity, however, for issues to prevent them, as purgative medicines will answer much better, and speedily carry from the system, by a natural channel, any increase of its fluids. Mr. Wilson, formerly a lecturer on anatomy in this town, in his younger days was for a long while annoyed by a spitting of blood, which threatened him with an attack of pulmonary consumption; at length an ulcer formed upon his arm, and shortly after the bleeding from the lungs ceased. The sore was an exceedingly obstinate one, and resisted for a great length of time all attempts that were made to close it; at last, however, it was accomplished, upon which the bleeding from the lungs once more returned.

A long continued discharge from a blister has, upon being too suddenly checked, produced oppression of the brain.

Suppuration is best promoted by the application of heat and moisture.

LECTURE IX.

ON ULCERATION.

ULCERATION is the absorption of any constituent part of the body. I have already endeavoured to explain to you, that under the increased action of the vessels which accompanies inflammation, an increased deposit takes place from the arteries; also, that this deposit is according to the stage of the inflammation, and the part which the inflammation attacks; that the inflammation is either adhesive or suppurative, and that it ends in the one state in the immediate production of the process of adhesion, and in the other in the effusion of a quantity of purulent matter from the extremities of the vessels.

But inflammation has not only an influence on the arteries; it has also an effect on the absorbent vessels, which are thrown into a state of inordinate action whenever any considerable quantity of blood is thrown upon them. There is a natural balance between the action of the arteries and the absorbent vessels. In a state of health, and at the adult period of life, the portion of matter deposited by the arteries, and the portion taken into the system by the absorbent vessels, are, as nearly as possible, balanced. In youth a greater quantity is poured out by the arteries than the absorbents remove; but in age a smaller quantity is deposited than absorption is taking away. You find, therefore, that the balance is destroyed in a different manner at different periods of life; but when a considerable and inordinate absorption takes place of some part of the body, that absorption is denominated ulceration.

It was formerly thought that it was necessary to the ulcerative process.

that matter should be formed; but this is not the case, as ulceration often occurs without being accompanied by any purulent secretion. The formation of matter, therefore, is not necessary to the process of ulceration. The great cause of ulceration is *inflammation united with pressure*. If the inflammation be considerable, and the pressure but slight, ulceration will be produced; and if the pressure be very considerable and the inflammation but slight, still there will be ulceration. As a proof, both that pressure is the cause of ulceration, and that ulceration is not necessarily accompanied with the formation of matter, I will give you the example of aneurism. Here is a specimen on the table of a large aneurism of the aorta, just above the heart, into which you may pass your hand in the hole produced by the ulceration of part of the ribs and sternum; those parts having been absorbed by the pressure of the aneurismal sac, producing an increased action of the absorbent vessels. Here the pressure is exceedingly great; but the degree of inflammation is very slight. In the same manner we see an aneurism of the aorta on the fore part of the spine, producing absorption of the vertebræ, by the pressure of the aneurismal bag, though no matter is effused, the ulceration being produced by the pressure arising from slight inflammation, unaccompanied by any secretion of matter. From these facts, we are led to conclude that the formation of matter is not necessary to the ulcerative process; and that it only happens on exposed surfaces of the body, where it is necessary for the protection of sores, by covering the granulations.

The constitutional symptoms of ulceration are slight. In general, a degree of fever attends it, but it is very slight. The pulse is under 100, and at the same time small; we do not find any considerable excitement of the constitution, and the fever is rather of the hectic or chronic kind, than sudden or violent in its attack. It continues sometimes for several days. The pain attending ulceration is not very considerable; if you ask the patient, he will tell you that it is of a gnawing kind, as if there were insects about the part. We may conclude, therefore, that the *irritation attending ulceration is but slight, and the pain not considerable*. With respect to the appearance of the ulcerated part, it looks as if it were worm-eaten; the surface is rough, and very irregular.

Sometimes a very considerable portion of the body is removed by ulceration. Here is an example of an ulcerated tibia on the table. See to what an extent ulceration has removed not only the cancellated structure of the bone, but the shell in which that structure is contained. Here is another example in which a great part of the tibia has been removed; the ulceration has extended six or seven inches, so

that little more than the fibula of the leg remains: such is the power of the absorbent vessels, of feeding, as it were, upon themselves.

The ulcerative process is sometimes extremely rapid in its progress: as much will be destroyed in the course of a few hours as will require weeks and months to repair. In proportion to the extent of surface destroyed will be the difficulty with which that surface is closed. Something will depend, also, on the form of the ulceration, and the kind of surface exposed: but the general rule is, that the difficulty of the reparative process is proportional to the extent of the surface destroyed.

It is a curious law, with respect to the ulcerative process, that it has a tendency to the nearest external surface of the body. This is a law which is attended with the most salutary effects; for, if it were otherwise, the body would very frequently be destroyed by the ulcerative process. In consequence of this tendency, matter formed at a depth in the body finds its way through the integuments, instead of proceeding through the more important parts. Many examples may be given of this law. One of the most remarkable is this:—Matter forms not unfrequently behind the sternum, close to the pleura and pericardium, which membranes are extremely thin—not so thick as paper. From the proximity of these membranes, it might be expected that the matter would generally open into the pleura, and, by discharging itself into the cavity of the chest, destroy life. Instead of this, however, the pleura undergoes no other alteration than that of becoming thick; and while it is acquiring this addition of substance, the process of absorption is going on in the inner part of the sternum, an aperture is formed through it, and the matter makes its way through the bone and integuments, rather than through the pleura and pericardium. The same circumstance takes place with respect to the peritoneum. If matter be formed in the abdominal muscles, the peritoneum is very rarely absorbed to admit the matter into the cavity of the abdomen: but the matter makes its way through the integuments, and finds an outlet on the surface of the body.

So in an abscess of the liver, the matter is discharged, not through the skin, which is a more remote surface, but into the cavity of the intestines, whence it is carried off by stool, or discharged into the stomach, from which it is thrown up by vomiting. These effects are produced in the following manner: the surface of the abscess becoming united with a portion of intestine or stomach by the adhesive process, the ulcerative action commences, by which a communication is formed between these surfaces, and the matter is discharged in the manner before mentioned, without danger, or at least with little danger, to life.

The same thing takes place in absorption of the bones. Thus, in

ulceration of the tibia, the matter breaks through the skin, or that surface which is only covered by skin and periosteum. This is a law in part depending on the less vitality and greater irritability of those parts which are nearest the surface of the body. The external parts of the body are the most weakly with respect to circulation, and most readily absorbed. I do not mean to say that they are weakly with respect to quantity of blood, for they possess a considerable share of vascularity; but they are weakly with respect to the living powers. The external parts of the body are more irritable, and more subject to vicissitudes of action from corresponding changes of temperature than other parts of the body. They have less strength of circulation, and consequently, give way to ulceration more readily than those parts which are more deeply seated, and possess a greater strength of circulation. Another reason is, that the adhesive process goes on gluing the more internal parts, while the external, which are thin and weak, become united to these parts, and in this way form a considerable solid. An instance of this is found in the adhesion of the pleura to a lung, so as to form one structure. It may be considered, then, as a law of the animal economy, that the ulcerative process has a disposition towards the nearest external surface of the body.

Those parts of the body which are newly formed are more liable to be absorbed than those which have long existed. A part covered by a cicatrix proceeds rapidly to ulceration, because it is more weakly constituted than those parts which have existed longer. The irritability of a part is proportional to its weakness; and the parts which are weak and irritable fall most readily into the ulcerative process. To take a familiar illustration—when a child labours under symptoms of constitutional derangement in cutting a tooth, why do you lance its gums? You cut the gums, not for the purpose of making an immediate passage for the tooth, and procuring immediate relief to the child, but because, when the gum by the adhesive process heals upon the divided part, a cicatrix is produced by this little operation, which is very readily absorbed; and the result is, that when the tooth rises, the child cuts it with much less pain and irritation than it would otherwise have done. If a man have inflammation in his leg, and this falls near a place where ulceration previously existed, the scar produced by the old ulcer gives way much more readily than the original skin. I have observed that if a patient under gonorrhœa has had an abscess in the urethra, which will now and then happen in consequence of suppuration of the lacunæ, or if from the same cause he has had an abscess in the scrotum, or on the side of the penis, if he should get a second gonorrhœa, he will be sure to be attacked with a similar abscess. Proceed with as much care as you may—guard

against inflammation with all possible caution—and yet, if he has abscess in the first gonorrhœa, it will infallibly return in the same part, if he get a second.

One of the most remarkable instances of the readiness with which the process of absorption attacks newly-formed parts, may be seen in *Lord Anson's Voyage Round the World*—a work which, I doubt not, is generally known to you. It is a most able and entertaining publication; and if any student has not read it, I can strongly recommend it to his perusal: for, while professional knowledge should undoubtedly be the first object of your pursuit, general literature should not be neglected, and is so far from being imcompatible with that primary object, that it cannot fail to enlarge your views, and give efficacy to your professional researches. So intimate is the connexion between every object of useful and scientific inquiry, that there is hardly one branch of knowledge which does not in some measure throw light and illustration upon another. The circumstance which I am about to mention may illustrate this remark. Lord Anson's book is one of the most valuable works which has appeared on nautical subjects; nor is it without its use as illustrative of a principle on surgery. Lord Anson's expedition to the Pacific Ocean was undertaken with a view of destroying the power of Spain in the New World, as he was obliged to sail sooner than he expected, many of the crew which he took out were invalids, some having cicatrices, and others having previously had fractured bones. In his passage round Cape Horn, he encountered very severe weather; many ships were obliged to return; some were lost, and the crews of those which succeeded in getting at last to the Isle of Juan Fernandez suffered great hardships. In doubling Cape Horn, the crew suffered severely from attacks of the scurvy; and it was remarked by the clergyman, who was an observing man, though he knew nothing of our profession, that the men who had had ulcers before were invariably attacked with ulceration in the same parts, and that if their bones had been formerly fractured they became disunited.

This does not surprise us, because we know that scurvy produces the ulcerative process, attacking the gums, causing profuse bleeding, &c ; that the ulcerative process has a stronger disposition towards parts newly formed, and that in this case, therefore, it appeared in parts where ulcers had formerly healed, and in disunited limbs where callus had previously formed. When the men got fresh vegetables, &c., on shore, they recovered their health; their bones united, and their sores healed. There cannot be a better example than this for the purpose of showing the readiness with which newly-formed parts ulcerate, as compared with the original structures of the body.

The parts more remote from the heart ulcerate more readily than those in the vicinity of the heart. This circumstance led me to say, that when the vital action is feeble, and the power of the circulation diminished, we find a greater disposition to the ulcerative process than otherwise. Thus for one ulcer in the arm we find twenty in the lower extremities; and you cannot but have observed, in going round the wards, the great number of sore legs, those opprobia of our hospitals.

In those parts which are endued with little vital power, ulceration takes place very readily; while in those to which the quantity of blood sent is very small, ulceration takes place with difficulty. This is the case with tendons. Tendinous parts possess very little blood; very few arteries or absorbent vessels are distributed to them. Hence, the process of absorption goes on with great difficulty, and tendons will slough to a great extent rather than become absorbed. This circumstance must influence our practice. In abscess under the fascia, an incision should be made as soon as possible through the covering, to liberate the confined matter. So in abscess of the finger, when the constitution suffers because the theca will not give way to the process of ulceration, and the nervous system becomes irritated by the pressure of confined matter, an early incision should be made to liberate the matter, and give relief to the constitution. The same practice should be pursued in abscess of the palm of the hand.

The ulcerative process is useful to the animal economy, in removing extraneous bodies from the system. Thus a ball lodged in the body, and a ligature round an artery, are disengaged by the process of ulceration. It is useful also in the exfoliation of portions of bone, in separating parts which would otherwise remain in the body, perhaps for the remainder of life. In three or four months a considerable portion of exfoliated bone will be separated by the ulcerative process. You will find a case of popliteal aneurism in the other hospital, where the leg has sloughed a little below the calf. Almost the whole of the leg has separated, except the tibia and fibula. A very small portion still remains to separate. By my advice nothing has been done to the living solids, and the process of nature is left to take its course. You will soon see that the bones themselves will separate by the process of exfoliation, and thus nature will herself perform the operation of amputation without loss of blood, or any danger to life.

ON ABSCESSES.

I shall now proceed to the consideration of abscesses.

An abscess is a collection of matter in a cyst, produced by inflammation. What happens in the formation of abscess is as follows:—First

there is an inflammation of the adhesive kind in the cellular tissue, by which the different cells of the cellular membrane become filled with adhesive matter. A slight ulcerative process takes place, the inflammation still proceeding, and a little cavity is formed by the ulcerative process, a space being left for the effusion of pus, the result of the second stage of inflammation. A drop of matter is secreted into the cavity, and as soon as it is poured out, the pressure on the side occasions an increase of the ulcerative process, which adds to the cavity previously formed. More matter is then produced, and the surrounding solids having a tendency to the ulcerative process, it is accumulated, so as to lead to absorption of the neighbouring parts. In the formation of abscess, the matter does not produce absorption of all the parts around equally, but it excavates chiefly on the side towards the skin, and very little in the opposite direction; a circumstance which led to the reflection, that matter had no power of eroding, as was formerly supposed, when it was thought that matter acted chemically on the solids like an acid, or caustic alkali.

Abscesses are dangerous according to the following circumstances:—

First, from their size. It is not, however, the quantity of matter produced which renders them dangerous, but the difficulty which nature has in repairing the devastation made by excavation of the solids, from the pressure of the matter.

An abscess may discharge a quart of matter, and the constitution may have been scarcely affected by it; but very soon after it is opened the constitution begins to suffer. It is not, therefore, the quantity of matter, but the process of restoration after the evacuation of the matter, which affects the constitution. The largest abscesses which occur in the body are those of the liver. Patients will sometimes recover from abscesses of this part, in which immense quantities of matter have formed. I remember one of enormous magnitude, from which the patient recovered.

Case.—Dr. Saunders, the lecturer on medicine at Guy's, asked me to see a woman who had a large abscess on the side. I made an opening into it with a lancet, and it discharged a surprising quantity of matter, as much as would fill two-thirds of a wash-hand basin. I have heard, indeed, of much larger quantities of matter having been discharged. After pressing out the matter, I passed a roller tightly round the abdomen, and brought the parts together, with a view of producing the adhesive process, which now and then occurs. I did not see the patient again, but some days after I met Dr. Saunders, who asked me how I thought the patient was going on. I told him I supposed he asked me, because he thought me very sanguine; and he replied, that

I should be gratified to learn that the woman was doing extremely well. In fact, the orifice had closed; no more matter was discharged, and the patient got well without any bad symptoms. I have mentioned this case, because it may guide your practice when you are operating upon large abscesses, and show you the propriety of endeavouring to procure the adhesive process, by bringing the sides of the abscess together. Very large abscesses sometimes terminate favourably, but in a great number of cases they destroy life.

The next circumstance which renders abscesses dangerous is their number. Thus, the great number of little abscesses on the surface of the body, in small-pox, frequently destroy life. Here nature performs the suppurative process; the pustules die away, and the cuticle is separated from the surface of the body; but nature has not the power, in many cases, of repairing the destruction of the cutis; the exposure of the nerves of the skin occasions great constitutional irritation, and the patient dies, as if destroyed by a burn or a scald.

Abscesses are also dangerous, from their being situated in vitally important parts, such as the brain, heart, or lungs; or when they are not seated in parts of vital importance, from their pressure on essential organs.

Cases.—A woman was admitted into this hospital for a complaint in the throat, occasioned by swollowing a pointed bone. All she complained of, at first, was a soreness in the throat; but she was shortly after seized with difficulty of breathing, which increased greatly, and she died. On examination after death, I found, upon making an incision into the pharynx, that between it and the fore part of the vertebræ, a large abscess had formed, which by pressing the pharynx forward on the epiglottis and glottis, occasioned difficulty of breathing, and in the end destruction of life. Shortly after this, Dr. Babington came to this hospital with a friend of his, who was labouring under great difficulty of breathing. He requested me to examine his throat: having put my finger on the back of the pharynx, and felt fluctuation there, I told him that this was a case of which I had seen an instance, where the patient had died from a collection of matter formed in the same situation. I immediately procured a seton needle, and including it in a canula, like a trocar, I put it down into the pharynx, let out a considerable quantity of matter, and the patient was relieved. Here was a case, which, but for this operation, would probably have terminated fatally, by the pressure of the matter on vitally important parts. In the same manner, abscesses in the perineum, or between the prostate gland and the rectum, will, by their pressure on the urethra, occasion irritation of that part, and sometimes complete retention of urine.

Thus, we find that abscesses, though situated in parts not of themselves vitally important, sometimes become dangerous by their pressure on more important parts.

LECTURE X.

ACUTE AND CHRONIC ABSCESS.

At the conclusion of our last lecture, gentlemen, we stated that the danger attending the formation of abscesses arose from their size, number, and pressure on important parts; and lastly, that when they formed in important parts themselves, they generally proved destructive to life.

Another danger which we did not then mention is, when abscesses occur between bones and the covering of bones. Whenever bones form the boundary of abscesses, such abscesses are exceedingly tedious, and in most cases dangerous. Thus it is in psoas abscess: in this disease the matter begins to collect on the fore part of the vertebræ, and proceeding through the hollow of the psoas muscle till it reaches the groin, where it makes its appearance just below Poupart's ligament; and from examination of these cases after death, the vertebræ are found ulcerated. It is not my intention this evening to enter into the consideration of psoas or lumbar abscesses, as they will be treated of on another occasion, but I just mention the complaint to show the danger of abscesses between bones and their coverings; and the reason of it is, that the process of exfoliation takes place, and they then become very long and tedious in their progress.

Abscesses are *acute* or *chronic*. The common course an acute abscess takes is three weeks. The adhesive inflammation first begins; this is succeeded by the suppurative: and, lastly, the ulcerative process comes on; and it is generally three weeks from its commencement before matter is discharged. But chronic abscesses are slower in their march; take, for instance, the psoas abscess, to which we have alluded; it is often six months before matter makes its appearance in that complaint. If a person comes to you with a psoas abscess, and you ask how long he has had pain in his loins, he will tell you for four, five, or six months past; seldom less than four, and generally for the space of six months. There are varieties in the irritability of different constitutions, but if you see a man with swelling in the groin, which, when he coughs, rebounds under your hand, and has a fluctuating feel, and who has had for four or five months pain in his loins, you will say that it is psoas abscess; so these are the criteria by which you are to know it. Chronic abscesses sometimes occur in the female breast.

Cases.—A lady was sent to me from Sussex some years ago, to have her breast removed: knowing the surgeon who had recommended this person to me to be an intelligent man, I did not attentively examine the breast, but said to the lady, I will call on you soon, and perform the operation. I fixed the day, and was to perform the operation, the patient being seated in a chair before me, when I said to the gentleman (Mr. Edwards) who was assisting me, I think that I feel a sense of fluctuation here, at least I will not proceed to remove the breast till I have ascertained whether it be matter. I took a lancet, and made an opening into it, and out gushed a quantity of matter. Thus a chronic abscess had existed in this part for a considerable time. Very lately, while going round Guy's Hospital, one of the young gentlemen, or I believe, Mr. Key, brought me a woman who had a chronic tumour of the breast. On examining it, I perceived a slight fluctuation, and stated that most probably it contained matter, but was told, in reply to this observation, that it had existed for four or five months; I said, however, it did not signify—asked for a lancet—made a puncture into it, which let out a quantity of matter; and went away smiling. I merely mention to you these cases to put you on your guard: for I have seen breasts removed, which were only chronic abscesses; and thus, from an ignorance of this circumstance, you might put your patient to a cruel operation, where a small incision would have done.

In the treatment of acute abscesses, the best medicine you can give is the liquor ammoniæ acetatis, sulphate of magnesia, and opium; six ounces of the first, one ounce of the second, and a drachm of the tincture of opium, of which the dose is three or four table spoonfuls three times a day. By this medicine, you lessen irritation, and expedite the suppurative and ulcerative process: no medicine that I have observed, under such circumstances, gives so much relief. The sulphate of magnesia prevents any costiveness from the opium, and the opium tranquillizes the nervous system, and lessens pain. The local treatment consists in the application of fomentations and poultices: and why, you may ask, use both these remedies? To promote heat and moisture, a greater quantity of blood is sent to the part, and a relaxation of the vessels takes place; this expedites the suppurative process, and that being done, the ulcerative process takes place with more ease. The kind of poultice to be applied to the part is of little importance; linseed-meal and water, bread and water, &c. No stimulating application would do; the object is to preserve the heat and moisture of the part, and to prevent evaporation: let the part be enveloped in oil-silk, for, by its assistance, the heat of a part is preserved, and evaporation prevented. It is desirable in the suppurative process to prevent

evaporation; oil-silk is what is generally used then in private practice; it is clean, agreeable to the patient, and most conducive to his comfort.

Before proceeding to the consideration of chronic abscesses, I will say a few words on the opening of abscesses. If an acute abscess seems disposed to go through its different stages without any interruption, the best practice is to leave it undisturbed. Acute abscesses, beginning under aponeurotic fasciæ, ought to be opened as early as possible; the earlier the better. The moment one drop of matter may be felt to fluctuate, it is advisable to make a free opening, both as it regards the constitution and the part. Whenever the matter can be felt close to bone, it will be right to open it, excepting in cases where it may occur from severe courses of mercury, between the cranum and pericranium. Mercury will inflame the periosteum (and the pericranium is a part of the periosteum) to a greater degree than the venereal disease itself; and in those cases where a fluid exists between the pericranium and bone, unattended with any blush, do not open it; it will be removed by purging, and giving bountifully the decoction of sarsaparilla. But when matter is formed, and there is a blush, it will not be absorbed; an opening must be made, exfoliation will often take place; but when there is no blush, beware of opening the tumour.

Now, gentlemen, the treatment of chronic abscesses will be very different from those of the acute kind. In the last case, you wish to diminish the state of excitement in the constitution; and in the former you do all you can to give it additional powers, by allowing generous diet, and giving the patient ammonia and bark; the ammonia is the medicine on which the principle reliance is to be placed. You know that of late bark has been much used; but people are apt to run into extremes—bark assists the suppurative process; generous diet must be allowed, in order to increase the action of the parts, by giving tone to the constitution. Stimulant poultices should be applied to the part, and the best I know is the muriate of soda (common salt) and water, a meat-spoonful of salt to a pint of water, and the poultice should be wetted with this; yeast and oatmeal, vinegar and flour, each of these expedite the process of suppuration. In indolent cases, it is customary to employ stimulant plasters, and the best I know is the empl. galb. comp.; it is stimulating, and consequently excites the action of the part. The emplast. ammon. cum hydrarg., and the emplast. thuris comp. are also used; they, however, are more tranquillizing, and, in general, excites slight perspiration over the part, similar in its operation to the soap cerate, which is also of use.

These then, gentlemen, are the remedies, local and constitutional, to

be used in chronic abscesses: but it remains now to be considered how to treat chronic abscesses, when it becomes necessary to open them · I shall now proceed to tell you. Suppose you are called to a case where there is a collection of matter under the fascia lata of the thigh (the largest in the body), extending, as it often does, from just above the knee to the trochanter major; what would you do? Open it, certainly; make an incision half an inch in length, and squeeze out all the matter you can. Having done this, apply a roller, making the turns all over the thigh, with the exception of the opening; the result of this is, in many instances, that adhesive inflammation is excited, and thus the sides of the cavities are often readily united; always take care, in the application of the pressure, to leave the mouth of the wound uncovered. The same directions are to be attended to in collections of matter, when met with under the tendinous expansion which covers the muscles of the leg and fore-arm; the object is to endeavour to produce the adhesive inflammation, just as in the case of abscess in the liver, that I stated to you on the last evening, from which the matter was evacuated by the puncture of a lancet, and afterwards by means of pressure; the adhesive inflammation took place, and the recovery of the patient was the consequence. This, then, is to be your practice, to endeavour to procure a union of the sides of the cavities by the adhesive process.

Another reason for the early discharge of matter is the prevention of scars, particularly in exposed parts of the body. This may appear to you of little consequence, but I tell you it is not so: scars, from abscesses in the neck of females, excite in the minds of most of our sex a reluctance to associate with them; and thus many a fine young girl may, from these blotches and scars, be doomed to perpetual celibacy. No part of the practice of surgery has been so bad as the manner in which wounds on the neck have been treated. I have seen on one side of the neck large scars from old wounds that had been badly managed, whilst, on the other side, where the treatment had been more skilful, scarcely any vestige of a wound was to be seen. I have, from very early in life (and subsequent experience has proved to me its use), been exceedingly careful in the management of these cases. Aperients, with calomel and rhubarb, should be given; evaporating lotions should be used. You must be strict as to diet and regimen; for though the patient be debilitated, he must be made still weaker. The best mode to adopt in these cases is, to open the tumours before the skin is much affected, and before a blush has appeared, and scars will in general be prevented. It is desirable, in opening the tumours, to use a very fine knife, for two reasons:—1. A small opening is made. 2. It does not

alarm the person. The knife I always use is the one contained in the eye-case, for cutting up the cataract, the blade one-eighth of an inch wide, and it appears to the patient as a needle. When you press the sides of the wound, take care to squeeze out all the solid flakes of matter to be met with in scrofulous tumours. If this be not attended to, they will at last slough; but if, on the contrary, you carefully avoid leaving any of that unorganized substance, adhesion will take place, and the wound heal up. Every thing in these cases depends on getting rid of the solid matter. Bread poultices, wetted with a sulphate of zinc lotion and spirits of wine, may be used afterwards.

Case.—Whilst living at Broad Street, in the City, a lady came to me with a tumour in the side of the neck. I perceived on the opposite side several scars; I said, "Will you allow me to try if I can prevent a scar here?" She answered, it was for that purpose she had consulted me. Warm poultices had been used on the previous occasions, with which I would have nothing to do in this, and she got well with scarcely a pimple to be seen. It is of the highest importance, then, to endeavour to prevent those appearances, which, on the exposed parts of the body, produce such painful feelings. In the higher orders of life, particularly, a child with scars and blotches on its neck would be secluded from society.

Now, gentlemen, there is a point of great importance to be attended to, viz.—the direction in which you make the opening: always make it transversely, and not in the axis of the neck; for when the wound heals, it will scarcely be seen among the creases or folds of the neck. One more observation on this subject: let me entreat you not to open these tumours when they have a blush on them like the hue of a grape; the veins are in a dilated state, and if you open the tumour, you will bring discredit on yourself. If the edges of the wound should not unite in any part, a little injunction of sulphate of zinc or copper may be used.

There are two other points connected with this subject, which I will mention to you, and then I shall have done.

1. The causes of hectic fever. You are all aware that a continued fever, *i. e.* rigors followed by heat, and a sweating stage, attend the formation of matter: these rigors take place once or twice in twenty-four hours, according to the irritability of the part and constitution: and had it been asked, thirty or forty years ago, on what it depended, it would have been said, absorption of matter into the constitution. Some of the old surgeons used to put sponge to the mouth of wounds, to absorb the matter, and prevent its being carried into the constitution; but gentlemen, it appears to have no power on the constitution.

There is no doubt, certainly, that the inoculation of putrid matter will, as we often see, sometimes prove fatal. The proofs that the absorption of common matter into the constitution does not produce fever, are—1. It is not during the formation of matter that the fever comes on; for never till after the abscesses have broken, is the patient attacked with it. Certainly, the formation of matter will be attended with a slight fever, but not of the hectic kind: the tongue will be clean, the pulse very little affected, and the person very slightly deranged; but after an opening is made into the part, constitutional irritation sometimes goes on, and life is then endangered.

2. The degree of hectic fever is not at all proportionate to the size of the surface on which the matter is formed. Look, for instance, at a large wound on the leg: the person will be going about with it, and feel little or no inconvenience; whilst a sore on the lungs of the size of a crown produces hectic fever of the most violent kind. On one part, it is very considerable; on another, it is very slight.

3. Hectic fever comes on when no matter has formed. A woman, who had her leg amputated, came into the hospital for a pain in the knee on the same side; the symptoms of constitutional irritation were so severe, that in consequence Mr. Chandler held a consultation. The knee-joint was a little enlarged, and violent pain in the part, with great constitutional disturbance existed. Amputation was now performed above the joint, and after the operation I had an opportunity of examining the limb. There was no formation of matter in the knee; in the condyles, however, of the thigh-bone the ulcerative process had commenced, and the hectic fever was the effect, in this case, not of a disease of the knee-joint, but of the cancellated structure of the thigh-bone. In those cases also where matter has been absorbed, no hectic fever can come on. Some years ago, my old friend, Mr. Cline, thought that psoas abscesses might be cured by causing the absorption of the matter. From the case of Dr. Saunders, which occurred at that time, he tried the effect of digitalis on a boy of sixteen years old, who had a psoas abscess; the size of the tumour diminished, the skin became flaccid; but as soon as the digitalis was left off, the matter returned again, and during the trial of the medicines, the pulse was lessened, and the boy a little weakened—symptoms which, as you well know, are produced by digitalis. But during this time, no hectic fever came on; therefore, the belief of the absorption of matter being the cause of hectic fever is unfounded.

The last circumstance that I shall mention, is the influence which the admission of air into cavities has in producing local irritation. Now, from what I stated concerning the absorption of matter into the

constitution, I think you will have agreed with me: whether you have or not I do not care; it is my duty to state to you my opinion—you must think for yourselves; only do not rest contented with thinking: make observations and experiments; for without them your thinking will not be of much use. The circumstance, however, about the admission of air into abscesses, when they are opened, not producing local irritation, will be less readily understood. When an opening is made into an abscess, very little irritation supervenes till the third day; I say the third day, because it is not till then that constitutional disturbance takes place. If asked whether air has any influence in producing local irritation, you may answer, yes; but I say that it is not the case. Old surgeons, in their opinion on this subject, maintained that it was the admission of air which produced the local irritation attending the opening of abscesses, and endeavoured to cure hydrocele by inflating it after the evacuation of the water. But what was the consequence? when the air became absorbed, the adhesive inflammation did not take place, and the hydrocele returned.

Again, experiments have been made on animals: air has been blown into the cellular membrane of a dog; nothing but a temporary stiffness from the distention of the skin takes place, and when the air is absorbed, the crackling goes off without the adhesive inflammation. Dr. Haighton made an ingenous experiment some years ago: he inflated the abdomen of a dog from an opening in the tunica vaginalis; and this mode of doing it evinced his knowledge; for in the dog and many other animals, there is a communication with the abdomen from under the tunica vaginalis. The dog was let loose; he was stiff for a few days, but when the air was absorbed he became quite well.

I know a curious circumstance which took place at the depôt at Norwich; it was at the time when persons were drawn to serve in the army. A man, unwilling to become a soldier, came to the surgeon, and said that he had a large rupture, which disabled him; he showed it, and the surgeon sent him away. This man had made a puncture just above the pubis, and inflated it with a brass blow pipe; the man himself mentioned it to a surgeon at Yarmouth as a joke. What takes place when air is admitted into the cavity of the chest? An air cell gives way, the wind goes into the cellular tissue, the face and body becomes bloated up, but is afterwards removed by absorption, without producing any inflammation; thus a person who holds that the admission of air into cavities produces the irritation attending the opening of abscesses takes a narrow and partial view of the case.

[After the lecture, the stomach of a dog which died of hydrophobia was exhibited to the class. The œsophagus was inflamed, and the

internal surface itself very red; there were also deposits of coagulated blood between the mucous and muscular coats, an appearance which, Sir Astley said, had always been observed in dogs that had died of this complaint. The animal had unfortunately bitten four persons, who were under medical treatment.]

LECTURE XI.

ON GRANULATION.

I HAVE endeavoured to describe to you the first mode in which the union of wounds, and the mode of filling up cavities is effected, namely, by the process of adhesion. I shall now proceed to consider the other mode of union between divided parts of the body, namely, *Granulation;* thus the two processes which Nature institutes for the purpose of filling up the cavities of the body, for the cure of wounds, are adhesion and granulation. If you are asked for a definition of the term granulation, you will say that a granulation is a newly-formed part, generally red in colour, and having the power of secreting pus. The mode in which granulation is produced is as follows:—and you will find it very similar to adhesion, but different from that process in one respect. When an abscess has been opened, or when a wound has been produced, if the abscess be not immediately closed, or if the edges of the wound have not been brought together, inflammation is excited, and this inflammation occasions an effusion of the fibrin of the blood upon the surface of the wound. This fibrin is poured out in a layer which covers the surface of the wound. The layer of fibrin soon becomes vascular, for blood-vessels, which are elongations of the vasa vasorum of the divided vessels, are forced by the action of the heart into the fibrin which has been deposited, and this layer consequently becomes vascular. The difference between the mode of union by adhesion and by granulation, is, that in the latter the vessels shoot to the surface of the layer which has been thrown out, terminating by open mouths on the surface of the newly-formed substance, and secreting pus, at the same time that a layer of lymph, or fibrin, as it is more correctly termed, is effused. The fibrin which is poured out, besides this purulent secretion from the vessels, forms a second layer, into which the vessels shoot as before. The vessels supporting the first layer are the means of supporting the second layer, where the vessels terminate, as before, by open mouths on the surface of the substance effused. In this manner layer after layer is formed until the cavity becomes filled.

The characters by which granulations are distinguished are these;

their surfaces are uneven; they are generally red in colour, and they secrete matter. I know not whether you have followed me or not, but this process may be easily explained. Suppose we open an abscess; the result is, that adhesive inflammation is produced in the internal surface of the cavity. A layer of adhesive matter is in this way thrown out, and if the sides of the abscess are brought together by passing a roller round it, we may often prevent the future formation of matter, as I have before had occasion to explain to you. But if the union by adhesion does not take place, then granulations are formed in the following manner:—When fibrin is poured out, the vessels shoot up to its surface, permeate the newly-formed substance, and terminate by open mouths on the surface of the layer. This layer becomes the means of filling up a portion of the cavity; it is soon succeeded by another; the vessels become elongated, effuse matter on the surface, and shoot up, as before, to the second layer of fibrin. In this manner one layer after another is formed, until the cavity of the wound is entirely filled. The vessels shooting into granulations are very numerous; they are principally arteries. If you inject an ulcer of the leg, the great degree of vascularity in the granulating surfaces is accounted for by the number of vessels divided into radiated branches, which we see entering the granulations, and producing the arborescent appearance which is observed in them. In examining the structure of granulations, they appear to become vascular in the following manner:—An artery enters at the base of the granulation, and is then divided into radiated branches; from these vessels pus is secreted, and an incrustation is formed, producing a layer of adhesive matter on the surface of the granulations. This is a little difficult to conceive; it is a circumstance which, I believe, has never been observed, and which I learned in the following manner:—I took a portion of injected ulcer from the arm, and threw it into alcohol, in order to observe its vascularity. After it was thrown into the alcohol it was so opaque on the surface that no blood-vessels could be seen. It is the fibrous matter, therefore, covering the surface of the granulations which receives the blood-vessels. In this view a granulation may be considered as a gland, and the surface of an ulcer merely as a glandular surface. Now a gland is a part of the body in which a secretion from the extremities of the arteries takes place, and the blood which is not employed in the secretion is returned to the heart by means of the veins which accompany the arteries. So in granulations, the arteries throw a quantity of blood near the surface of the wound, and there secrete pus. There is a vein accompanying each artery, and the fluid conveyed by the vessels is partly converted into pus on the surface of the ulcer, and partly returned back to the heart.

Granulations are not good absorbent surfaces in ulcers recently formed; but if the ulcers have existed for any length of time, the absorbent vessels readily take into the system any substance which may be applied to them. In this way we frequently see persons salivated by the use of injections of the oxymuriate of mercury. It is not an uncommon practice to inject a solution of a grain or two grains of oxymuriate of mercury into sinuses, for the purpose of stimulating the vessels. If the sinus has existed for a considerable time, the oxymuriate of mercury is frequently absorbed, and the mouth becomes affected in the same manner as if the mercury had been absorbed into the system by rubbing it into the skin, or taking it into the stomach. This proves that old granulating surfaces have the power of taking in, by absorption, a fluid of this description. I have known what is commonly called the black wash, which is composed of the liquor calcis and the submuriate of mercury, when applied to the surface of ulcers, produce an effect upon the mouths of persons who are easily affected by mercury. I believe that the wash of the liquor calcis and calomel often produces good effects in the cure of sores, by the mercurial action which it excites in the system, and not merely by its local effects on the sore to which it is applied. Ulcers, are, however, frequently the means of producing baneful effects upon the constitution, by the readiness with which they absorb any substances which are applied to them. Thus, arsenic applied to the surfaces of sores, is very frequently absorbed into the system; and on this account, arsenic is to be regarded as a very dangerous external remedy. With respect to the use of arsenic as an internal remedy, it ought never to be employed without extreme caution, and unless the patient is watched from day to day.

Case.—I remember a case in the other hospital, of a patient who was brought in with a fungus of the eye, and who was under the care of Mr. Lucas, a man of great skill in his profession, and the father of the present surgeon of that name. Mr. Lucas ordered a solution of arsenic to be applied to the part. After it had been used for three days, the man complained of pain in the stomach, but this was not supposed to arise from the use of the solution. The application was continued; the pain in the stomach became excessive; convulsive tremors of the muscles succeeded, and the patient died. I was quite sure that he died from the influence of arsenic in the system; and, upon examination of the body after death, I found the stomach in the highest degree inflamed, and exhibiting the peculiar appearance which is produced by arsenic, and not by poisons generally. I believe, therefore, that this person died from the application of the arsenical solution. Quacks are in the habit of destroying tumours of the breast by the use of arsenic. Women are

sometimes, though very rarely, foolish; and they will undergo any torture which is not inflicted by a knife, rather than submit to an operation that would not give them a tenth part of the pain which they suffer from such applications. They go to a person who tells them of the number of cures he has performed by means of a specific used for the purpose of destroying scirrhous affections; and, indeed, these quacks very frequently destroy the scirrhous part, and the patient too. Mr. Pollard, a surgeon, told me, the other day, of a person in town, who applied an arsenical application for a scirrhous affection of the breast, in consequence of which the patient died in less than a week. I had myself occasion lately to perform an operation for a scirrhous breast, to which arsenic had been applied. I asked the woman which gave her most pain, the application of the arsenical preparation or the operation. She replied, that the pain of the operation was not so great as that of the application, and that the arsenic had been applied ten or eleven times. The consequence of these applications is, that they become absorbed into the system, and produce derangement of the stomach, the intestinal canal, and the nervous system, and sometimes paralysis.

While I am on this subject, I will mention a case to you which occurred in this town, and which I should have scarcely believed, if it had not come within my own knowledge. A person in this metropolis happened to have *bow* shins. It was a part of his duties to teach ladies to draw and paint, and in the prosecution of this branch of his profession, he found his *bow* shins, as he himself declared to me, a very great evil. He felt that his merits were less fairly appreciated, and his instructions less kindly received, by reason of the convexity of his shins; he was persuaded, in short, that his *bow* shins stood between him and his preferment. Under this impression, he went to a very noted person in this town, and showing him his bone, said to him, "Pray, Sir, do you think you can make my legs straight?" "Sir," said the doctor, "I think I can: if you will take a lodging in my neighbourhood, I think I can scrape down your shins, and make them as straight as any man's." A lodging was taken; the father of the patient assisted in the operation, and all three of them—the father, the son, and the doctor—took a turn in scraping down the convex shins. A great deal of rasping was required; an incision of very considerable extent was made in the shin, the integument was turned aside, and an instrument which was at that time contained in the surgeon's case, called a rougee, was employed to scrape the shin bone. When the doctor was tired of rasping, the father took a spell, and the patient, in his turn, relieved his father. At last the shell of the bone became so thin, that the doctor said they must proceed no further with that leg. The other leg was then rasped in a similar

manner, and thus large wounds were produced in both of the shin bones The surfaces granulated very kindly, and very little exfoliation of the bones took place; but, unluckily, the granulations *would* form bone, so that up jumped the bones of the shin again. The doctor, however, was not to be defeated, and accordingly put a layer of arsenic over the whole surface. It was in consequence of the effects of this application that I saw the patient. The arsenic was absorbed into the system, and he became paralytic in his arms and lower extremities. A great number of exfoliations took place in his legs; and he showed me a large box, in which the exfoliated portions of bone were contained. I recommended him to go into the country, and he went to Bath, where he staid for some time, and got rid of his paralysis. This case made a good deal of noise in town; and there were some surgeons who expressed a strong wish to prosecute the doctor. I recommended them, however, not to take any steps until I had seen the patient himself; and when he next came to me, I asked him whether he thought his legs improved, and whether he would again undergo the same operation, at a similar hazard of his life, to have his legs made a little straighter? He replied that he would; and under these circumstances I was of opinion that, as the young man was content, it was a folly to think of prosecuting the doctor. The patient, in this case, appeared to be as great a fool as the doctor whom he consulted, and deserved to be punished for his folly. I have no wish to injure individuals; and I shall not, therefore, mention the name of the operator. Some time has elapsed since the case occurred, and the transaction is now almost buried in oblivion. One of the parties is since dead; not the person, however, who underwent the operation, for he still lives, and is proud of his improved legs.

Opium, when applied to the surface of sores, is very readily absorbed into the system. I believe that it is often a very useful application to the surfaces of sores. I mentioned, on another occasion, a case in which a tetanic affection was produced in a child, whose leg had been amputated by Mr. Lucas, the present surgeon of Guy's, and where the application of opium to the stump gave more immediate relief than I ever remember to have witnessed. It relieved the spasms, and, as I believe, saved the child. If opium, applied to the surface of sores, be absorbed into the system, it produces excessive costiveness, extreme pain in the head, and torpor of the system, which is only to be removed by the frequent administration of active purgatives. The effects on the constitution, when absorbed from the surface of sores, are very much the same as when it is introduced into the stomach.

Granulations possess nerves as well as arteries, veins, and absorbent vessels. Granulations are sometimes extremely sensitive; but this is

far from being the case in all granulations. We shudder at seeing a person handle a sore roughly, supposing that it must give the patient extreme pain. Granulations which spring from parts endued with great sensibility, such as muscles, are indeed extremely sensitive; but many granulations, such, for instance, as arise from bones, have no sensibility whatever. If ulceration be produced to a considerable extent in an exposed bone of the head, a probe may be put into it, while the patient is quite insensible of your touching his head. If you do this in the granulations arising from bones, and ask the patient whether you have touched him, he will say, "No;" but if you apply the probe to the edge, or near the edge of the wound, he will feel it. Granulations, therefore, springing from bone in an uninflamed state of the bone, are not sensitive. Granulations, however, which spring from the cancellated structure of the bone, are, sometimes, extremely sensitive. I have, at present, a patient who had a compound fracture of the leg: the fracture was attended with abscess, and a small exfoliation of the bone took place. In this case, when a probe was put down into the cavity, the granulations from the cancellated structure of the bone were extremely sensitive. When the inflammation passes away, the sensibility of the part is diminished. The same thing happens with respect to granulations springing from tendons, (as in the tendo achillis, for instance,) which are entirely insensible. So granulations arising from fascia, and the aponeurosis of muscles are endued with little sensibility. In general, therefore, although granulations springing from parts of great sensibility are sometimes exquisitely sensitive, those arising from parts in a great degree insensible, or entirely so, as tendons, are not sensitive; a circumstance which you cannot at any time go round a large hospital without having an opportunity of witnessing.

Granulations are very readily united to each other. The mode in which union is effected, is, by bringing the edges of the two granulating surfaces together, so as to produce the adhesive process. The surface of the granulations will be covered by adhesive matter, and you have only to apply the two surfaces to each other to produce an union. The knowledge of this principle is very often useful in the practice of surgery. A man has a considerable portion of the scalp raised from the skull, and the pericranium throws out granulations, whilst the raised portion of scalp is also granulating. Instead of waiting for the tedious process of the union of both surfaces, by granulations filling the cavity, you have only to place one portion of the granulations upon the other, bind them well down with adhesive plaster, and they will be sure to inosculate. In this manner, a surface, which it would otherwise have taken a long time to close, will be healed in a few days. The cavity of the scrotum, after

removal of the testicles, is often covered with a great number of granulations, by bringing the surfaces of which together with adhesive plaster, a wound, which would otherwise require weeks in healing, will be healed in a very short time. It was upon this principle, namely, that of bringing together the granulating surfaces, that Mr. Baynton proceeded with so much success in the treatment of ulcers; so that our hospitals are now much less filled than they formerly were with those opprobia of our art.

The next subject to which I shall direct your attention is the closing of sores by cicatrization.

The formation of the new skin with which a sore is covered over is called cicatrization, which is produced in the following manner:—The vessels at the edge of the skin form granulations, and these granulations unite with the granulations of the surface of the sore. The granulations produced from the edge proceed toward the centre, and those on the edge inosculate with those on the surface of the sore, and are united by the adhesive process. The vessels become elongated from the edge of the sore, and proceed in radii from the circumference to the centre. Day after day an addition is thus made to the cicatrix, until at last the vessels reach the centre from every part of the circumference; when the process of cicatrization is completed. It may be said by some persons, that this is not the only mode which Nature takes for the formation of new skin, for that it often happens that the process of cicatrization commences from the centre of the sore. If these persons mean to say that insulated portions of the skin are sometimes seen in the centre of a sore, having no communication with its edges, there can be no doubt of the fact. But how does this happen? It is not that the centre of the sore has the power of forming new skin, but the new skin in the centre is produced in consequence of the whole of the skin not having been ulcerated away, and granulations arising from the part of the skin which was left. This only happens in irregularly-formed sores, where the healing process is gone on to the centre, and then the sore has broken out in the circumference. If granulations arise from any portion of skin in the centre, these granulations produce new skin, and an insulated portion of skin is produced, forming a part of the cicatrix, which is not afterwards ulcerated away.

When a cicatrix is formed, in the first instance it is extremely vascular; but when it has existed for any length of time, the blood-vessels become contracted, and it is whiter than the original skin. Hence, the white appearance of the cicatrices after small-pox; for, although they are more vascular than the original skin, when first formed, in a little time they lose this vascularity, and are endued with less living power than the surrounding parts.

The readiness with which the surface of a sore is covered in by cicatrization depends very much on its form. A sore of a circular form requires a very considerable time before it will heal; whereas a sore of much greater length but of less diameter, will heal more quickly. You may always pronounce, therefore, that a round sore will be longer in healing than a longitudinal one, *cæteris paribus*, as, for example, in the same patient, where the constitution is the same. The reason is, that the vessels have to elongate much less from the edge to the centre in a longitudinal than in a circular sore. The form, therefore, has an influence on the readiness with which cicatrization takes place. Sores are very often difficult to heal, from their situation. Thus, if a sore be situated at the back of the leg, there will often be great difficulty in healing it. Indeed, such a sore can only be healed by raising the heel, and so loosening the skin, in order to give it a power of being drawn in, to form a new cicatrix. By this means the vessels are more readily elongated, and continually draw the skin nearer the centre of the sore. It appears, then, that the form and situation of the sore have a very considerable influence on the healing power.

Here is a model in plaster, on the table, representing the case of a patient who had been severely burnt, and in which extensive deformity had supervened on the cicatrization of the wounds. The chin had become united to the breast, the arms to the sides, and the upper arm to the fore-arm.

Now, in looking at a case like this, some of you might be induced to exclaim, How abominably inattentive must the medical man have been who had the care of this patient, for all these consequences might have been prevented? If you said this, your censure would be culpable: you have no right to say so; for it is a case that may happen to any of you. Deformities of this kind generally arise after the process of healing is completed; they are the effects of the contraction of the cicatrices, and not of the contraction of the skin at the time of the accident. Here the skin is contracted so as to pull down the chin, and evert the lip, so that the saliva runs over the surface of the breast, and is constantly excoriating it. All these results proceed, not from the production of the new skin, but from the contraction of the cicatrices after the production. I say this from having seen, among many other cases of the kind, the case of a child who was a short time since admitted into Guy's. In consequence of the contraction of the cicatrices, the upper arm adhered to the fore-arm, and the thumb was drawn back so as to be immoveably joined to the upper arm.

Case.—I will mention another case of this kind. Some time ago, a young gentleman, who was playing with fire-works, happened to be

slightly burnt in the forehead. His father, who was a very intelligent man, showed considerable anxiety, and expressed his apprehensions at the time, that some horrible deformity would arise from this accident; for he had witnessed instances in which the eye-brows had been drawn up, so that the patient had no power of closing his eyes, from a similar cause. Granulations, however, very soon arose on the surface of the forehead; the sore healed kindly, and the father was delighted to see what he supposed to be the favourable termination of the case. Some time after this, however, I saw this gentleman, and upon inquiring after the child, he told me that he was very well, but that a horrible deformity had ensued from the accident: the eye-brows were drawn up, the eye-lids elevated, and the forehead was quite wrinkled. This took place a few weeks after the healing of the sore, in consequence of the contraction of the cicatrix; and unfortunately this was a deformity incapable of being remedied by any means which art could suggest. I have never seen a case like that represented in the plaster bust on the table, where the chin is united to the breast, which was capable of being cured. You may, by putting a knife behind the bridle and dividing it, separate the chin, to a considerable extent, from the breast; but whatever force you may use for keeping the head back, the contraction will ultimately be the same. There are some parts of the body, however, in which deformities of this kind may be removed; as in cases in which the thigh is united to the abdomen, where the bridle may be divided, and the joint afterwards straightened; but where the bridle is broad, as under the chin, no operation will avail.

In the formation of cicatrices the original parts may all be reproduced, except two. In the first place, new skin, though differing somewhat in texture and smoothness, is still a substance similar to the original skin. Skin may be defined to be a substance producing rete mucosum and cuticle. Are both produced by the newly-formed skin? Undoubtedly. The cuticle is produced very quickly, and with respect to the rete mucosum, or covering matter of the skin, a little time elapses before it is produced; but it is produced, as the following fact will show:—The new skin of a Negro does not become white, as in that of Europeans, but is at first red, and after a little time turns blacker than the original skin. I was struck with this in the other hospital, in the case of a Negro, who had been a sailor in a privateer, and had received several wounds in different parts of his body. I observed that the cicatrices were everywhere blacker than the original skin. We may, conclude, therefore, that the skin which is reproduced is true skin; that the cuticle is very quickly reproduced, and the rete mucosum after a short period. The cellular membrane is also reproduced, though it has at first the appearance of a

solid fibrous mass, which requires some time before it is drawn into the reticular texture, similar to the original membrane. Tendons are very easily reproduced. If the tendon achillis be divided in an animal, it will be reproduced in about a fortnight or three weeks; but it will be somewhat larger than the original tendon. The same thing takes place in the human subject; as you may see from a specimen in our museum of a tendo achillis which had been reproduced, and which is larger than the original tendon. Every body knows that bones are reproduced; not only the shell of the bone, but the cancellated structure; not only the salt or phosphate of lime, but the cartilaginous substance in which it is deposited. Nerves are also reproduced, but there is some little doubt whether they assist at all in the restoration of sensation by anastomois. Dr. Haighton made an ingenious experiment with respect to the union of nerves. He divided the par vagum, or eighth pair of nerves, in a dog, on one side, and then let the animal live for some time; he then divided the par vagum on the opposite side, and after suffering both nerves to unite, he then divided them at the same moment, when the animal died.

In *tic doloureux*, after the operation of dividing the nerve, even when the sensibility of the part to which the nerve was distributed is not entirely restored, and although numbness still remains in the cheek, the painful sensation usually returns.

Case.—An old gentleman, from Bury, in Suffolk, had undergone the operation of the division of the nerve for *tic doloureux* several times. When he came last to me, there was still a little numbness remaining in the lip, yet the pain of the *tic doloureux* was as great as ever. I divided the nerve, but the operation did not afford him the same relief as before. He came again some months after, and wished the nerve to be again divided. The pain in the part had returned to its former degree, although the numbness of the lip was much greater than before.

The parts of the body which are not produced, are—first, muscles, in the case of a man who had a scar on the fore-arm, which appeared to have long existed, I found that, instead of muscular fibre under it, a tendinous structure had formed. A muscle, when divided, unites by tendons, and not by muscle. Secondly, the cartilages of the ribs unite by bone, and not by cartilage. (Sir Astley exhibited to the class a specimen of cartilage of the human rib which had been divided, and in which ossific union had taken place.) This, however, will depend in some measure, on the age of the person; for in very young subjects cartilaginous union will be produced, but in subjects more advanced in years, the cartilages of the ribs invariably unite by bone.

LECTURE XII.

ON ULCERS.

In treating of this subject, I shall first describe the appearance of ulcers in what may be termed their healthy state, I shall then detail the several circumstances which render their cure difficult, and proceed to point out to you the remedies which are found to be the most efficacious in practice. An ulcer may be defined to be a granulating surface secreting matter. When an ulcer is in a perfectly healthy state, the appearances which it exhibits are as follows:—The granulations are florid; their blood-vessels possess a considerable quantity of arterial blood, and the freedom of circulation produces this florid appearance. The granulations are equal on the surface of the sore, rising a little above the edges; for it is necessary, in order that a sore should heal kindly, that the surface of the ulcer should be a little more elevated than the surrounding skin. The surface of the sore secretes matter which has a milky appearance, or rather the appearance of cream. The edge is whitish in colour, and adapts itself to the surface. In this manner the granulations springing from the surrounding skin are very nicely adapted to the circumference of the sore, so that the granulations of the edge unite with those on the surface. When, therefore, you see the surface of an ulcer red, the granulations equal, the surface rising a little above the edge, the discharge of matter healthy, and the edge of the sore nicely adapted to the surface, you will say that this ulcer is in a healthy state. In order to produce this state of the sore, the best practice which you can generally pursue is to apply poultices and plasters.

When you open an abscess, or when a wound is produced which cannot be healed by the adhesive process, the best application is a poultice for the purpose of exciting the growth of granulations. This poultice must not be too warm; it should be gently stimulating, so as not to repress the growth of granulations, but to form a soft bed to which they may spring. The effect of the poultice is, by its warmth and moisture, to encourage such a degree of action as may promote the rising of the granulations. When the granulations have risen to the edge of the sore, then the practice must be altered; and the object is to adapt the granulations of the edge to those of the surface. For this purpose adhesive plaster or unctuous substances are employed, with a view of pressing down the granulations of the edge of the sore on those of the surface, so as to make them unite. These are the principles of treatment in the cure of ulcers. We first encourage the growth of granulations by the application of the gentle stimulus of poultices, and when the gra-

nulations have risen to the edge of the surrounding skin, we press down the granulations of the edge on those of the surface, either by the application of adhesive plasters, or of unctuous substances. The more unctuous such substances are the better; for the vessels will have a greater facility in shooting towards the centre, and the granulations embedded in this unctuous matter will more readily extend along the surface of the sore.

Such are the principles of treatment applicable to ulcers in the healthy state; we shall now proceed to consider the impediments to the healing process which frequently occur, and which render a different mode of treatment necessary.

The first circumstance which renders the cure of ulcers difficult, is the too prominent state of the granulations producing what is vulgarly called proud flesh. In this state, the granulations rising considerably above the edge of the surrounding skin, are necessarily prevented from uniting with those of the surface. In order to prevent the continuance of this state of the sore, the common treatment is to apply dry lint to the centre of the sore, and some unctuous substance to the edges. The lint, by its pressure, prevents the growth of granulations in the centre, while the unctuous substance allows the granulations on the edge to proceed and inosculate with those on the surface of the sore. The lint should not be applied to the edge of the sore, for if it be, the granulations will be prevented from proceeding towards the centre of the sore. The nitrate of silver, and the sulphate of copper, are employed for the purpose of destroying luxuriant granulations near the edges of the sore. Here our practice is just reversed. Lint is applied to the centre of the sore, for the purpose of keeping down the granulations on the surface; whereas the caustic is applied for the purpose of keeping down the granulations which are nearest the edge of the sore. In this way we promote the healing of the sore, forming a little circle by the caustic from day to day until we arrive at the centre. Adhesive plaster is used with the same intention, viz., that of keeping down the granulations. The common adhesive plaster is, however, too stimulating for this purpose; a plaster, composed of equal parts of the emplastrum thuris compositum, and the emplastrum saponis, is a much better plaster to promote the healing of ulcers than the common adhesive plaster. This is a point deserving attention; because, if the application be of so stimulating a nature as to excite inflammation and excoriate the skin, we are often under the necessity of leaving off the adhesive plaster. It sometimes happens, that the action is so great as to oblige us to apply a sheet of lead to the surface of the sore; when this is necessary, you may apply a piece of lint covered with the ceratum cetacei, over these a piece of sheet lead, and round the whole a roller should be

passed of about five yards in length. These are the various modes of treatment in this state of the sore.

The next circumstance to which we shall advert, as giving rise to difficulty in the treatment of ulcers, is a languid state of the sore, in which its action is too slight. What is the character of such a sore? You may know that a sore is in this state, by the glossy and semi-transparent appearance of the granulations; instead of the florid hue which characterizes granulations in their healthy state, a considerable portion of them is bloodless. The fact is, that the vessels near the surrounding parts have not sufficient power to throw the blood to the extremities of the granulations. To remove this glossy appearance, and produce a healthy state of the sore, the application most commonly used is the unguentum hydrargyri nitrico-oxidi. This is a strong stimulating application, which occasions a determination of blood to the part, and produces a florid redness in the granulations, instead of the semi-transparent appearance which they assume in the languid state of the sore. It produces, however, a white appearance in the edge of the sore, arising from the thickened state of the cuticle, which prevents the growth of the granulations on the edge. This may be corrected by the application of the unguentum hydrargyri fortius to the edge of the sore. Lotions are frequently applied with the same view; such as the sulphate of zinc, in the proportion of two grains to one ounce of water: or the sulphate of copper, in the proportion of one grain to three ounces of water. The oxymuriate of mercury, and the liquor calcis, are also used for the same purpose. In addition to these applications, it will be necessary to bind up the sore with a roller, and to allow the patient to take a great deal of exercise; for, without exercise, a healing disposition will not be produced in the sore.

It will be highly useful in these cases to employ some stimulating plaster, such as the emplastrum galbani compositum, for the adhesive plaster will not answer the purpose: the sores are languid, and the object is to increase the action in the part; this will be greatly assisted by giving the patient a nutritious diet, allowing him at the same time to take exercise, and, in fact, by doing every thing to improve the constitution.

Well, the next stage of ulcers we come to, is that to be met with in patients on their admission into the hospitals. When the surgeon goes round the hospital on the first day after the taking in, he will meet with a number of persons with inflamed ulcers on their legs; and what, I ask of you, is the character of these sores? You know that there is a serous discharge from these wounds, a bloody ichor, composed of serum and the red particles of the blood—a disposition, in many cases, to slough

—that the surface is covered with a brown incrustation, and the skin and surrounding parts are highly inflamed. Well, then, you will find that the same treatment which is applicable to inflammation in general, will be of service in these cases, where inflammation has been kept up for a long time to a high degree. Rest must be enjoined: the patient must also keep in bed in the recumbent posture. Fomentations and poultices must be employed: fomentations will tend to produce a secretion from the part; and poultices, by their soothing quality, to promote the growth of granulation; both will evacuate the matter from the wounds. Then, with these applications, the vessels begin to form, the sore assumes a better appearance, healthy secretions are thrown out, and granulations shoot up, fibrous matter is deposited, and in a little time you will have the skin covering the wound. Fomentations, poultices, rest, and the recumbent posture, must be enjoined, and the patient must be purged. The best cathartic that you can administer is calomel and compound extract of colocynth, five grains of each at bedtime; and a draught of the infusion of senna and sulphate of magnesia on the following morning. By this plan you will do more to subdue the inflammation than by any other I know. If the part in the neighbourhood be much inflamed, leeches had better be applied near the circumference of the ulcer: with this treatment, in a very few days granulations will spring up, pus will be secreted, and the surrounding edges will assume a healthy appearance. Without, however, attending to the constitutional treatment, all your local applications will be of very little avail.

Gangrenous Ulcers.—This kind of ulcer you will very frequently see in a man who has been in poverty and distress for a long time, going up and down the streets of London, looking out for an asylum where he may rest his head; this person comes to the hospital, at last, in a reduced and emaciated state. When you see a wound of this description, you will know it by the surface being perfectly free from discharge; the surrounding edges of a livid appearance, with small vesicles or blistered spots on them; and the patient suffering much from irritative fever. Seeing this state of the wound, then, you enjoin the patient the recumbent posture, which is essentially necessary to promote the separation of the dead parts. The principle of treatment in these cases is to produce a very slight increased action in the part. Sometimes, when the action is excessive, you must, on the contrary, soothe the part;—both will be sometimes good. When there is debility of the part, a slight stimulus should be employed; but when there is excessive action, it is to be avoided.

The best application that I know for producing a slight stimulus and

checking gangrene of the part, is the nitric acid; there is none equal to this: fifty drops of it to a quart of distilled water, will be found a most useful remedy. The acid may be increased to a drachm; this may be done or not, just as it may give pain to the part; but, generally, the average-quantity is fifty drops. I have seen, in a short time after this application, a quick separation of the parts from sloughing, to which there is always a tendency; and healthy granulations spring up, being, as the chemists would call them, oxygenated; that is to say, the carbon being thrown off from the arterial blood in the vessels with which they are supplied. Here the granulations are of a beautiful florid red: this, then, is a most useful remedy.

Oiled silk should be applied to the wound, so as to prevent the smell arising from the parts tainting the room: for it is always considerable when the process of sloughing is taking place, and granulations are arising; an advantage, though a slight one, compared with the others, in the use of the nitric acid, is, that the offensive smell is nearly taken away by it, the sulphuretted hydrogen is destroyed. Another very good application to sores of this kind is nitre, in the proportion of one drachm to a pint of water; this agrees very well with the sore, and has the same effect, though in a diminished degree. It appears that all the combinations of the nitric acid are good. Sulphuric acid is of use also in these cases, six drops of the acid to an ounce of water. The muriatic acid has not the same effect as the other two. If nitric acid be applied to the wound, the granulations will assume a red and healthy look; if the sulphuric be, they will have nearly the same appearance; but if the muriatic acid be put to the wound, it will be seen that it will have a comparatively slight effect on the granulations, and, therefore, it is an inferior remedy in the treatment of these wounds. Poultices made of port wine, porter, dregs of lees, yeast, a large spoonful of it to a pint of meal, may be all used. Gentlemen, you must have recourse to a great variety of applications: for, after you have tried one, which at the beginning did good, you will, from the wound getting worse under its use, be obliged to change it for another, and so on. There is at this time a girl in the other hospital with sloughing of the pudendum; a variety of means have been used, all of which, at the outset, relieved her a little; but none continued to do her good for any length of time, and she will, most probably, in the end, fall a victim to the disease: it is upon this account that I mention to you so many remedies. The carrot-poultice is also a very good application. The constitution of the patient must be attended to, or else the local means will do very little; therefore, local applications must be aided by constitutional remedies; and what is the best medicine that you can administer?—opium and

ammonia, gentlemen; twenty drops of tincture of opium, three times a-day, with ten grains of the ammonia, in an ounce and a half of camphor mixture, and a little (one drachm) of compound tincture of cardamom.

This is the medicine which will agree best with the patient. He must be well nourished, or at least he must have as much as his digestive powers will allow; port wine also must be given, and spirits must be allowed to those who have been addicted to their use. By brandy and opium I have seen these sores cured; in fact, they are our sheet-anchors in the treatment of these ulcers. But more of this in another lecture, as I shall have to speak of gangrene again.

The next kind of ulcer that I come to is the *Irritable Ulcer.*

This sore is extremely difficult to cure. How then are you to know it? When you find the granulations most unequal; in some parts being very high, in others very low. The discharge from the wound consists of a bloody pus. I do not know what to compare it to better (though it is not quite so good) than strawberry cream. (*A laugh.*) It is pus mixed with the red particles of blood. This sore may be known by the inequality of the granulations, the nature of the discharge, and the great pain and tenderness in the part; so that the patient, when touched in that part, is like a sensitive plant. As you will be sure to find considerable difficulty in the treatment of these sores, I will tell you, the best application that you can make use of is one compounded of the cetaceous ointment, gray oxide of mercury, and powdered opium:—

℞ Unguent Cetacei
Hydr. Mit. ā ℥ss.
Pulv. Opii ʒj. M.

Fiat unguentum.

This must be spread on lint, and applied to the part twice a-day. What are the internal remedies you ought to exhibit in these cases, gentlemen?—calomel and opium: these are the medicines on which you are to rely; a grain and a half of calomel and a grain of opium morning and evening. Nothing will be of so much service as this medicine. It should not be carried so far as to produce ptyalism, or to affect the constitution severely; but it should be given so as to restore the secretions, and to diminish the action of the nervous system. The calomel will do the first, and the opium will lessen the nervous irritability. The treatment of inflammation has been improved of late by calomel and opium. The effect of this medicine in chronic inflammation may be seen in the disease called iritis. Here calomel and opium may be exhibited; nor should a deposit of white matter, having the appearance almost of pus, into the anterior chamber of the eye, be any barrier

to their use. Give five grains of calomel and a grain of opium night and morning; and in the space of a week, if the eye has not suffered a good deal, or become disorganised, this remedy will correct the inflammation. We use other aids, such as the compound decoction of the sarsaparilla. Some think it a placebo; others have a very high opinion of its efficacy. I do not think much of it myself in those cases; but, after the use of mercury, it diminishes the irritability of the constitution, and soon soothes the system into peace. With this view, its aid, combined with other remedies, may be of use.

So much for irritable ulcers. Before I conclude this part of the subject, however, I will mention a case which just occurs to me: I allude to that of Mr. Lucas, the surgeon of the other hospital. That gentleman, in consequence of having pricked his finger, had a very irritable sore, which obliged him to go into the country, where he remained for a considerable time. The remedy which he found most efficacious for bringing the sore into a healing state, was the application of a solution of nitric acid, very much diluted, and the compound decoction of sarsaparilla. From the latter he thought he derived considerable benefit. By these means, and by attention to his general health, he affected a cure; but his life was in considerable danger, from the irritable sore produced by this apparently trivial accident.

Sinuous Ulceration.—It is necessary to explain here well what I mean. Whenever, therefore, a sore extends to any considerable depth, so that the discharge has to travel through a channel before it arrives at the surface, such an ulceration is called sinuous. There are two reasons why these ulcerations are difficult to heal: first, from matter forming at the bottom, forcing its way through the passage, and thereby disturbing the healing process, by breaking down whatever adhesions or granulations form on its sides; and, secondly, the same interruptions occur from the actions of the muscles, when these ulcerations happen in muscular parts. Thus, if the healing process has commenced in fistula in ano, when the sides of the fistula are at rest, the first time that the person has a motion, the sphincter ani, by its action, will destroy all the newly-formed adhesions and granulations; consequently, if the sphincter be divided, and the parts have rest, granulations will form, remain undisturbed, and a cure be the result: this clearly shows that the motions of the sphincter occasioned a continuance of the evil. Sometimes in these cases, for the purpose of exciting the adhesive inflammation, injections are used. Now, which is the best? In my opinion, tinctura lyttæ: it readily produces inflammation; adhesive matter is thrown out; you take care to keep the sides of the sinus in contact; and by these means the parts will permanently coalesce. Sinuses of the

rectum, however, are seldom cured without an operation; indeed, I have met with but two such cases: one was that of a gentleman who came from the north of England; he had been annoyed by a fistula on each side of the anus, one of which was operated upon by the late celebrated Mr. Hey, of Leeds. He was cured on that side by the operation; but as it was attended with great loss of blood, the patient was too much frightened to be cut again, and came to town for my advice. I examined him, and finding that there was considerable space between the anus and fistula, I advised him not to submit to the operation, and said that I would try to relieve him without it, I injected first port wine and water: this did not answer—it was not sufficiently powerful. I therefore threw in port wine alone, and succeeded in obliterating the canal. I was fortunate in this instance; for I can assure you that fistula in ano is seldom, very seldom, completely cured without an operation. When you do not succeed by injection, you may employ the caustic bougie. Still pressure will be necessary; and it is quite impossible that you can succeed without it. When the fistula is very deep, it may be divided into two; or a seton may be introduced, and kept in for a fortnight or three weeks, with a view of stimulating the parts for the purpose of filling the cavity with granulations.

LECTURE XIII.

THE SUBJECT OF ULCERS CONTINUED.

In this evening's lecture, I shall continue the subject of ulceration. Ulcers are frequently formed for the purpose of allowing the discharge of extraneous bodies; when such substances become lodged, therefore, in any part of the human frame, inflammation is excited—pus becomes secreted, which, pressing towards the surface, ulceration takes place, and the extraneous substance is thus afforded an opportunity of escaping. Ulcers frequently occasion, to a very considerable extent, exfoliation of bone: here you can assist nature by applications which act chemically on the parts; apply, for this purpose, a lotion composed of muriatic acid and water, or nitric acid and water; this wash will dissolve the phosphate of lime or earthly matter of the bone; and by removing this inanimate substance, the power of the absorbents will be increased, and a quicker separation of the diseased from the healthy parts be the consequence. The acids, however, have not so great an influence in these cases as you might be led to expect from what chemical writers have stated; still, however, you will find them to be of use, and they should therefore be employed.

Ulcers which occasionally form on the fingers and toes are sometimes exceedingly difficult to heal, from an irritation caused by portions of the nails. You may think this too trifling a subject to require a moment's consideration; but I can assure you the truth is far otherwise. A nail, for example, from pressure or some other cause, shoots into the skin beside it; a fungus springs up: the surgeon applies caustic and destroys it: in a short time it rises again; the caustic is repeated, and the fungus disappears: it speedily, however, returns, and will continue to do so, notwithstanding all his efforts to the contrary, unless he remove the irritating cause. Now this cause is the projecting portion of nail; as soon as that is got rid of, the fungus will cease to grow, and the ulcer immediately heal. The best methods to adopt for the purpose of radically relieving these troublesome affections are as follow:—Pare down the nail as thin as you can without producing bleeding, then raise it a little, and introduce between it and the sore a small piece of lint; in this way the irritating cause may generally be removed. It sometimes happens, however, that the sore is so exceedingly irritable, that even lint cannot be lodged on its surface without producing great increase of inflammation and pain; in such cases, what I do is this:—with a pair of scissors I slit up the nail on that side where the disease exists, and then with a pair of forceps turn back and completely remove the divided portion. This is a very painful operation certainly, but I have known persons get well by this treatment in ten days, where the complaint had for months resisted every other. The applications to be used after the operation are of little importance; poultices are the best, and these will be required but for a very limited period; for the irritating cause having been removed, the fungus will soon disappear. The next best plan to be adopted, for curing these cases, is the application of a blister; this brings away the cuticle, and often the nail along with it. The most lenient method is the one first mentioned, viz. the introduction of a piece of lint. Mr. Hunter, in alluding to this disease, said that the parts were not in a state of harmony. This is very true, and a very proper expression; he also applied it to those cases where a disease in the gland producing the nail, causes the nail to turn black; such affections are not uncommon, and are often thought to be syphilitic, and I have frequently known persons salivated in consequence. This opinion, however, is perfectly erroneous. You must wash the sore with liq. calcis and calomel, and administer the pil. hydr. submur. comp. and decoct. sarsæ.

Sometimes, in these cases, we are obliged to dissect out the gland that produces the nail; and though the operation is a most painful one for

the patient, yet we are, for the purpose of affording permanent relief, compelled to perform it.

Whitlow, what is it? Why, an exceedingly painful swelling, terminating in an abscess by the side of a nail. The principle is this: the matter forms at first under the nail, but, being unable to force its way through that horny substance, burrows under it, thus producing excessive pain and irritation. Fungous excrescences often arise in these cases, which induce the surgeon to apply caustic; this practice is worse than useless. You should, after fomenting or poulticing the part, remove the loose portion of nail; this permits the matter to escape, and instantaneous relief is the result.

The next ulcer that I shall describe is the *menstrual;* I mean by this, a sore which is once in three weeks or a month covered with blood. This complaint is connected with amenorrhœa. In going round the hospitals, you all must have observed that females will one day have their sores covered with pus, and probably on the next day covered with blood. In fact, the menstrual ulcer is of very common occurrence. You must wash these sores with liq. calcis and calomel, give to the patient the mist. ferr. c. myrrh. and pil. hydr. submur. comp., one ounce and a half of the former twice or three times a-day; and five grains of the latter every night at bed-time. These medicines will generally succeed in improving the state of the constitution, by restoring the defective secretions.

The next ulcers that I shall describe are those which arise from *varicose veins;* and here I shall detain you for a few moments, as the subject is one of some importance. The veins in different parts of the body often become varicose, but those of the lower extremities by far the most frequently so. This condition of the vessels may arise from a variety of causes; but the more immediate one appears to be either a thickening of the valves, so that they are incapable of approximating, or a rupture of the valves: in either case the effects will be the same—the blood pressing in one uninterrupted column—the veins become distended and serpentine, and the valves widely separated from each other—their arteries, by their powerful attempts to return the blood to the part, soon excites inflammation; and ulceration quickly supervenes. What are the common effects produced here by the first desquamation of the cuticle? Why, the whole surface covering the diseased veins is formed into a crust, under which a quantity of serum is secreted. The first thing to be attended to in these cases is the recumbent posture: in fact, this position is indispensable; you can do nothing without it. Lint wetted by the mercurial wash should be laid on the ulcers—oiled

silk over these, and then the limb should be well and regularly bandaged, beginning at the foot. The bandage allows the valves to recover their lost action, and consequently will be found to be highly useful. Another great benefit is derived in these cases from opening the veins; indeed, they are so distended, that they may more properly be termed lakes than rivulets. If you do not open the vessels, you will find considerable difficulty in the progress of cure. The best plan that you can adopt is to puncture them by means of a lancet, twice in the course of every week as long as you think they require it; let the bandage be afterwards applied, and the parts kept wet by means of evaporating lotion. No danger whatever attends the opening of these veins, and very great relief will be afforded by it. If the punctures, however, at any time should not unite, but fret into ulcers, you must apply to them the liq. calcis and calomel. It often happens that persons, who, for any length of time, have had the veins of their lower extremities in a varicose state, will find at night a great quantity of blood in their shoes; the crust before alluded to, coming off, is the cause of the hemorrhage. Upon being called to a patient so situated, you put him in the recumbent posture, apply a bandage, wet the part constantly, either with the spirit wash or cold water, and in all probability you will soon get rid of the disease altogether.

Pregnancy is a frequent cause of varicose veins; so also is obesity.

It was formerly the practice, when the veins were in a varicose state, to tie and divide them. This plan is still pursued by many surgeons; but it is one, gentlemen, that I have deprecated in my lectures in this theatre for the last eight or nine years: it is bad treatment, very injudicious, and fraught with great danger; therefore, let me exhort you never to sanction it. I have seen this operation prove fatal in two instances in these hospitals; therefore I was induced to say that it did not succeed, and have for years spoken against it. A gentleman of Nottingham informed me, that he had tied the vena saphena, for a varicose state of the veins of the leg in a young farmer, in other respects healthy, and the operation proved fatal. The same lamentable catastrophe occurred to a most respectable practitioner at Brentford; and both these gentlemen told me, that they would not again perform the operation for the world. If I were to tell you all the cases in which I have known it terminate fatally, I should recount at least a dozen. Another *overwhelming* objection to the operation is, that when it does not prove fatal, its ultimate effects are perfectly nugatory. If I were asked which of the following operations I would rather have performed upon myself, viz. the saphena major vein, or the femoral artery tied, I certainly should choose the latter. When an artery is tied, the inflam-

mation is *above* the ligature, but in a vein it is below; in this case, the vessel becomes terribly distended, the inflammation uncommonly severe, and either extensive suppuration, mortification, or death, the result

Mr. Travers has written an admirable essay on this subject, which well deserves your attentive perusal.

Ulcers are sometimes occurring in the cellular membrane, forming what we call *chronic carbuncles.*

When the constitution is impaired, from whatever cause, it frequently happens that small swellings will form under the skin. At first they are red; then turn purple; and ultimately slough. The ulcerative process is slow in those cases. A white substance will soon be perceived at the bottom of the sore, and as soon as this comes away, healthy granulations will rapidly form, and the wound become healed. Constitutional treatment, however, in these cases, must not be forgotten; for unless you improve the general health, the ulcers will not get well. You should administer aperients, such as the infusion of senna, Epsom salts, &c., and give alteratives—the Plummer's pill will be found the best. For females, where great general debility has given rise to the formation of these sores, no medicine can equal in power the carbonate of ammonia. I shall have frequent occasion to allude to this. I generally give it in the following form:—

℞. Ammon. Carb. ʒss.
Aq. Menth. Virid. ℥ v ss.
Tinct. Cardam. Comp. ℥ss.

M. ft. mistura.

If any one medicine improves the nervous system when deranged more than another, it is this. I have often prescribed it for females when in a state of extreme weakness, and its effects are truly astonishing: two table-spoonfuls of the mixture may be taken two or three times a-day. If the poultices have not the effect of exciting the granulating process, you may wash the sores with the liq. calcis and calomel lotion, or gently touch their surface with the nitrate of silver.

It not unfrequently happens that the skin in various parts of the body gets into a state of *superficial ulceration*, and without any evident cause. The best applications in these cases are the yellow wash: ungt. hydr. nit., or the ungt. zinci oxydi. The internal use of the oxymuriate of mercury will likewise be found particularly beneficial and salutary; give it in the formula mentioned to you in a previous lecture, viz. in conjunction with tincture of bark: a small quantity of this mixture should be taken in a little white wine, once or twice daily, according to the age and symptoms. This medicine will be found a very valuable one,

when the above-mentioned ulcerations are connected with disease of the mesenteric glands.

There is an ulcer often existing on the face, called *noli me tangere*, which name imports nothing more than that you must not touch it. This disease has never been correctly described; the truth is, that it is an ulceration of the glands or follicles of the nose, those small cavities from which you can squeeze sebaceous matter; the ulceration extending deeply, at least even the cartilages of the nose become destroyed; the plan of treatment to be pursued here is as follows, you must get prepared an ointment according to the following prescription:—

℞. Arsenic Oxyd.
Sulphur Flor. āā ʒj.
Ungt. Cetacei ℥j.

M. fiat unguentum.

You must spread some of this ointment on lint, lay it on the ulcer, and leave it there for twenty-four hours; then remove it; a slough will come away: you dress the ulcer with some simple ointment, and it will generally heal. If the ulcer is not deep, you may cure this complaint without using the arsenical preparation, by merely painting the surface of the sore with a solution of the nitrate of silver. You must be cautious, however, in your manner of using this application. A gentleman once came to me with an ulcer of the kind of which I am now speaking, and which I painted in the manner described to you with a camel hair-brush. In the course of the day, when at Lloyd's, he was asked by some friends what was the matter with his nose; for they told him it was quite black; and, in point of fact, it was so. I was not aware, at the time, that a solution of the nitrate of silver would have produced that effect; and I merely mention the circumstance, that you may be on your guard. Deep ulcers having a malignant aspect, often remain in the faces of old persons, without producing any ill consequences, though, from their appearance, they portend the most direful effects. To such sores, the best application is the lotion, composed of liquor calcis and calomel.

Ulcers frequently form in joints, arising from inflammation caused by a deposition of the urate of soda. Persons will come to you with many joints open from this cause. A gentleman came to me from the country, thus circumstanced. Several of his joints were quite exposed, and the cartilages of some of them absorbed. I found in each of these joints a lump of the urate of soda; therefore, when it is necessary, you increase the openings through the skin, remove the urate of soda, that being the exciting cause of disease.

Occasionally, the thickened state of the edges of ulcers impedes the

healing process. These edges must be adapted to their surfaces, and this may be done by means of the empl. galban. comp., which will remove the indurated cuticle, and stimulate the parts to action; if this, however, should not succeed, you may use the ungt. hydr. fort. or ungt. lyttæ: or you may, with a lancet, scarify the edges, and this method will often succeed when every other fails.

The edges of sores are sometimes very much *inverted;* constitutional treatment, as well as local, is necessary here. With respect to local, the application of the nitrate of silver to the edges, and the black wash to the surface of the wound, are generally all that will be required: and the constitutional medicines I have so often mentioned to you must be regularly given until the ulcer heals.

Some sores have their edges very much *everted*, and this affection is commonly symptomatic of a cancerous diathesis; the usual method of treatment practised in these hospitals is to poultice such ulcers; to attend particularly to the condition of the general health, until the edges have resumed a natural and healthy state. The admirable mode recommended by Mr. Baynton should be had recourse to, which, by approximating the sides of the wound, and thus facilitating the processes of granulation and cicatrization, will more surprisingly contribute towards the completion of the object we have in view.

LECTURE XIV.

ON GANGRENE.

Having traced inflammation through its adhesive, suppurative, and ulcerative stages, I shall now proceed to consider it in its most destructive form, namely, when it exists in such excess as to produce gangrene. We find that inflammation, when it is extremely active, occasions a destruction of vital power. At other times, when there is a less degree of inflammatory action, but where the powers of the part are feeble, the life of the part will also be destroyed; so that gangrene is produced either by an excess of inflammatory action, where the powers are natural, or by a less degree of inflammatory action, where the powers of the part are feeble. Gangrene may be considered as a partial death. This is its definition: the death of one part of the body, while the other parts are alive.

The symptoms of gangrene differ according to the manner in which it is produced. When gangrene is the result of high and active inflammation, the pain attending its production is exceedingly severe; the inflammation is very extensive; there is generally a blush to a considerable extent; and there is generally, though not always, a considerable

degree of swelling. The secretion from any sore which may exist ceases, for the skin no longer perspires. The surface of the skin becomes of a dark colour; it is said to become purple, but it is rather of a brownish tinge. The cuticle is raised; a vesication is produced, and when this breaks, it is found to contain a bloody serum. When this serum is discharged, the skin assumes the gangrenous appearance, and becomes perfectly insensible. The vesication extends to parts beyond the ulceration; thus in sores of the leg we frequently see a large portion of the skin giving way, and the gangrenous vesications extending beyond the ulcerative surface. The constitution suffers considerable derangement from gangrene; there is a high degree of irritative fever, and the pulse is often exceedingly quick. The pulse is generally said to become slow when gangrene takes place, but I have never observed this. I have indeed occasionally remarked but a few beats in a minute, because it is very frequently intermittent. Still the pulse is quick, though occasionally intermittent. It is said also to become soft, but I should not say that this is the character of the pulse in gangrene. It is quick, very small and thready, and generally irregular. Gangrene seldom occurs without delirium, and it is attended also with vomiting and hiccough. Hiccough, indeed, is the characteristic sign of gangrene, and it takes place though the gangrene may be situate in a part very distant from the stomach; as for example, in the toe. The fact is, that when gangrene arises from a diseased state of the constitution, the stomach is extremely deranged, and this derangement of the stomach is followed by a spasmodic contraction of the diaphragm, producing hiccough. This symptom does not arise from alteration in the action of the diaphragm, but from its sympathy with the deranged state of the stomach. If you wish to correct hiccough, you may arrest it for a time by giving some slight stimulus, or even by adopting opposite means. Thus a glass of cold water will suspend it for a considerable time.

Such are the symptoms when gangrene is the result of excessive action. But gangrene is sometimes the effect of a low degree of inflammation; as when it is produced by the application of cold. When a great degree of cold has been applied to any part for a considerable time, the part will become benumbed; that is, its nervous powers will be diminished: and when it is thus enfeebled, it will be unable to bear a very slight degree of supervening inflammation, so that gangrene will be produced, and the destruction of its life will follow. In this climate, however, destruction of the life of the part does not in general immediately follow. A person will come to the hospital with his feet benumbed; he may have been wandering about the streets, unable to find a place of refuge; until he becomes, from this cause, incapable of walk-

ing. Great care must be taken in these cases not to apply heat very suddenly; even the common heat of the bed frequently occasions inflammation, which is extremely liable to proceed to gangrene, in consequence of the diminished nervous influence of the part. I knew a gentleman of the first consequence in this country, and whose death occasioned perhaps as much regret as that of any one who has died for many years, who lost his life from an act of imprudence. He had been out shooting, and had exposed himself to severe cold; and finding his feet benumbed on his return, he immediately put them into warm water. The consequence was, that a gangrene took place, of which, notwithstanding all the care that could be taken of him, he died. In this climate it generally happens that inflammation succeeds the application of cold after an interval of two or three days. By the use of some slight means of treatment this inflammation is generally suspended, and it is by the repetition of the inflammation rather than by its severity that the powers of the part become at last exhausted. In colder climates than our own the part exposed to cold becomes white, and the suspended circulation is commonly restored by rubbing the part with snow. If it be not very carefully treated, however, inflammation and sloughing is apt to come on. If a part be completely frozen, inflammation frequently ensues in a short time, and after continuing for a few hours, is followed by a destruction of the vital power.

These are the symptoms which we observe in cases where gangrene is the result either of a high degree of inflammatory action, or of diminished power. When gangrene is produced by either of these causes, the process of separation soon commences. This process is one of the most curious operations of nature in the human body. There is nothing more extraordinary to my mind than the power which nature possesses of separating even large members without any danger from hemorrhage, or the smallest jeopardy to life. Thus we see a limb of considerable size separated without in the slightest degree endangering the life of the patient. There is an instance of this at the present time, in the other hospital, in a case of popliteal aneurism, which will afford you an opportunity of judging of this process of separation for yourselves. The first appearance which we observe after the destruction of the life of any part, is a white line, which nature forms for the separation of the dead from the living parts. For this white line we anxiously look, since it is the barrier which nature sets up between the dead and the living parts, and it becomes a criterion of the cessation of the gangrenous disposition. At this white line the cuticle is raised. This elevation of the cuticle is a vesication, which forms a line of circumvallation around the gangrene. When the cuticle becomes separated, as it will in two or

three days, we find a chasm beneath it, produced by the absorption of the living skin in contact with the dead. The living skin is taken up by the absorbent vessels into the constitution, and in this manner the living parts are separated from the dead by a process of nature. If we were to reason *à priori* on this subject, it might be expected that the absorbent vessels would rather remove the dead portion of skin in contact with the living; but this is not the case. The absorbent vessels act on the living parts, but not on the dead: nor is the dead skin absorbed after the time when granulations have formed, but it becomes loose, and ceases to attach to the surrounding parts; the chasm formed by the absorbent vessels affording an opportunity for the separation.

The next part which begins to separate is the cellular tissue immediately under the skin. Gangrene proceeds to much greater extent in the cellular tissue than in the surrounding skin, because the cellular membrane is a part of weaker living powers. It is for this reason that a sloughing disposition in sores extending to the cellular membrane is so dangerous. A small chancre beginning at the pudendum of the female, and sometimes in the penis, will frequently occasion destruction of life in the part. Some persons have absurdly supposed that these sloughing sores are not chancres, because they have not the common venereal character. But how does this happen? If a chancre forms in the pudendum of an irritable female, and has a sloughing disposition, it extends into the cellular tissue, inflames to a high degree, and produces gangrene. In this manner the character of the chancre becomes destroyed. There is at this time an unfortunate female in the other hospital, who has lost a considerable portion of the external organs of generation, in consequence of a sloughing chancre. The hospitals teem with such cases: and indeed this deplorable result is always to be expected when a sloughing chancre extends into the cellular tissue, a part naturally weak, and rendered weaker in these persons from their irritability and mode of life.

The next part which separates is muscle. Muscles separate nearly opposite the edge of the skin. Wherever the skin separates, the muscle gives way; a line of separation is formed, and the living portion of muscle is taken away from the dead. This is not the case with tendons; these, like the cellular tissue, do not separate opposite the skin, but at a considerable distance from the part at which the sloughing takes place. If a tendon is exposed in the palm of the hand, by a sloughing ulcer, it separates at the wrist, for it is incapable of resisting the inflammation, in consequence of its weak living powers, and separates therefore at the part where it joins the muscle.

The nerves separate, like muscles, opposite the skin. But the most

extraordinary instance of the process of separation is that which takes place with respect to the larger blood-vessels. What would be the result, if you were to separate with the knife the anterior and posterior tibial arteries, without placing a tourniquet on the limb? The person would die in a few minutes. Yet nature cuts through these vessels, and frequently divides the arteries I have mentioned, without a drop of blood issuing from the limb. This happens in the following manner: The blood in the vessels of the dead part becomes coagulated; the coagulum, however, does not confine itself to the dead part, but extends to the living vessels which join it, and is, in this manner, glued to the inner side of the artery, so that the vessels are, as it were, hermetically sealed; and not a drop of blood can escape by the side of the coagulum. The same thing takes place in veins, the coagulum adhering to the inner side of the living vein, so that no blood can escape. If you amputate a limb at a considerable distance from the part at which gangrene has commenced, you will still find the vessels sealed. The first amputation which I ever performed, was in the case of a gentleman who had a gangrenous ulcer near the head of the tibia. In this case it was necessary to amputate above the knee, as sufficient skin would not have been left if the amputation had been performed below. When I loosened the tourniquet, I was surprised to find no femoral artery. On a closer examination, I found that the inner side of the femoral artery was completely plugged up, and sealed by the coagulum, which had extended at least six inches above the place at which the gangrene had occurred. It appears, therefore, that the artery is not only sealed at the place at which nature cuts through it, but at a considerable distance above it, in order to provide against the danger which would arise from a separation of the coagulum.

Bones, at last, become separated; but this process is very slow, and it is a long time before they exfoliate, loaded as they are with phosphate of lime. Hence, we are often under the necessity of taking away bones when the process of separation is in other respects complete. I am anxious, whenever I have an opportunity in these lectures, to refer you to cases actually existing in the hospitals; and you cannot have a better opportunity of observing the process of nature with respect to the separation of bones, than in the case of popliteal aneurism, to which I have before directed your attention. This man underwent the operation for aneurism in the other hospital. The aneurismal bag had been loaded with fluid blood for a length of time; the process of gangrene commenced at the ankle; all the soft parts were absorbed, and there is nothing now remaining but a portion of bone, which will also separate, if we permit it to do so. The saw would quicken the process, but it is

unnecessary, for the bone will separate by the efforts of nature alone. I knew a person in the county from which I came (Norfolk), whose leg entirely separated by the process of gangrene alone. In the foot this very commonly takes place; in the calf of the leg it is not common, but below the calf it frequently occurs. I attended one of the king's messengers, some time ago, who came from Germany, with a gangrene in the foot. The foot separated at the tarsus, and the whole process went on without any surgical operation, and with nothing but the aid of the simplest applications.

Gangrene is frequently the effect of a debilitated state of the constitution. Thus, if a man have been confined by long continued fever, the nates are apt to slough and become gangrenous in consequence of the imperfect circulation, arising from the position in which he has been forced to remain. Some fevers have a greater tendency than others to produce gangrene; as for example, scarlatina. In slight cases of scarlatina, the most horrible effects will sometimes arise from gangrene. The tonsils will slough to a great extent, parts of the Eustachian tube, and even the tympanum will separate, and large portions of bone exfoliate. The worst effects of this kind are observed in those cases of scarlatina where the fever is not the most violent. The measles are very apt to be followed by sloughing, unless great care be taken not to irritate the skin of the chest too much. In this town it sometimes happens, that a large blister applied to the chest of a child labouring under measles occasions a high degree of inflammation, producing gangrene, and endangering the life of the patient. In constitutions of an unfavourable kind, I have often seen the measles produce a slough forming a black aperture in the cheek of the child, through which its food was passed, and life soon destroyed. Mercury, if used to excess, often excites sloughing, from the fever and consequent debility of the constitution which it produces. Whatever, in short, weakens the constitution much, disposes it to the production of gangrene; for the body, when thus debilitated, cannot bear any excess of action. When the application of cold is the cause of gangrene, the effects are produced very much in the same way. The powers of the part to which the cold is applied are diminished, and this diminution of power leads to the destruction of the part, under the first excess of action.

There are some parts of the body naturally constituted feebly; as for example, tendons. When inflammation attacks a tendinous structure, it runs very readily into a state of gangrene. Hence, the danger of making incisions into a tendinous structure, which frequently affect the nervous system with the highest degree of irritability, and produce tetanic symptoms. It is not the injury to the nerves which produces

tetanus, but the sympathy of the nerves with the injury to the tendon.

It may be stated, as a general principle, that inflammation is the cause of gangrene; gangrene very rarely happens without inflammation; but as there are some exceptions to this general principle, I will mention them. I have seen, in a case of hydrothorax, a small spot in the legs become at once black, without any appearance of inflammation, and extend itself until it occupied a very large surface. Here the total absence of circulation, and not an increased degree of it, occasioned the destruction of life in the part. So we now and then see aneurism producing gangrene. In the case of popliteal aneurism, to which I before adverted, the gangrene is produced, not by the bursting of the aneurismal bag, but by the pressure of the bag on the vessels, occasioning the destruction of life in the limb below. I saw a gentleman a few months ago, who was upon the point of death from the pressure of an aneurism. His foot afterwards became gangrenous. He did not die, however; for a separation of the foot, and part of the leg, took place, and he ultimately recovered.

So much for impeded circulation without inflammation, as a cause which sometimes produces gangrene. The division of a considerable blood-vessel will sometimes produce the same effect. I believe I have already mentioned in the lectures, the case of a gentleman who was stabbed in the groin by a foreigner, with a dirk or sharp knife. He was stabbed just in the femoral artery; considerable hemorrhage took place, which was stopped by a ligature on the artery; but the leg afterwards became gangrenous, and it was necessary to perform the operation of amputation. Since I commenced these lectures, I have seen a most melancholy instance of a gentleman in the prime of life, who died from gangrene, in consequence of an injury to the femoral artery. This gentleman was thrown out of a gig as he was going down a hill, and the wheel of the carriage went over his thigh. When he was taken up, it was found that he had a simple fracture of the femur. Every thing which attention and skill could do for him was done; but some peculiarities were immediately observed at the time of the accident. The lower part of the leg was quite insensible; it was considerably swelled and hard. After lying in bed for a week, the patient became so restless that he wished to be removed. This was done in the gentlest possible manner. He did not, however, experience the relief which he expected from a change of position, and the swelling was in some degree increased. I was then sent for; and when I saw him, I was surprised to find that gangrene had already commenced at the knee. This was hardly to be expected from a simple fracture; for it so rarely happens that the

femoral artery is injured by a fracture of the thigh-bone, that amongst all the cases of fractured femur which I had seen in the course of my life, I never yet met with an instance in which the artery was injured. However, from the immediate insensibility of the limb at the time of the accident, from its coldness, from the swelling which accompanied it, and also from the pulsation which existed opposite to the fracture, I was led to believe that the femoral artery was torn through. The question then arose whether we should amputate or not. Upon examination, I found the limb emphysematous; the air had extended into the cellular tissue up the thigh to the abdomen, and putrefaction had already commenced. I perceived, therefore, that the patient had but a few hours to live, and that it was useless to put him to the pain of an operation. Upon examination after death, by the medical gentlemen at Rochester, where the patient resided, it was ascertained that the femoral artery was divided. It seems extraordinary, when we contemplate the situation of the thigh-bone, that a fracture of it should not in one case out of ten produce a similar result. A little knowledge of anatomy, however, explains this circumstance. The artery is enclosed in a sheath, which so far protects it, and its elasticity yielding to the pressure of the bone, enables it to escape in a great majority of cases from the occurrence of this accident. The history of gangrene, as far as dissection enables us to judge of it, is this: the excessive action of the part closes the blood-vessels, and the blood contained in them becomes coagulated. This is a curious circumstance, which I ascertained by an experiment made on an animal. It is a well-known fact in physiology, that if a quantity of blood be included in a living vessel between two ligatures, at the distance of two or three inches, this blood remains about three hours before it becomes coagulated. To ascertain whether, if blood were admitted into a dead vessel, from which the air was entirely excluded, it would coagulate as it would in a glass out of the body, I put a ligature on the jugular vein of an animal, and another ligature at the distance of two inches from the first; then cutting through the end of the vein, I brought it externally to the skin, so that it hung out from the wound. Having ascertained that the blood coagulates in three hours and a quarter in a living vessel, I took off the ligature from the pendulous dead vessel, and found that in ten minutes the blood had coagulated as firmly as it would in a vessel into which a person had been bleeding. In a dead blood-vessel, therefore, the blood becomes coagulated just as it would in a vessel out of the body. If you attempt to inject a part after gangrene the injection will not enter the vessel. There is a specimen on the table (Sir Astley exhibited the specimen) of a gangrenous limb, where you may perceive that the injection has entered only as far as the part at which gangrene

has commenced. Such is the state of parts under gangrene. They can never be recovered, because living blood can never again circulate in them.

The subject next in order is the treatment of gangrene; but as I intend to occupy a little of your time this evening by a very curious experiment, I shall defer the consideration of that subject to the next lecture. I have something to say to you, also, gentlemen, on another subject. In the course of these lectures I have always considered it my duty to direct your attention to what is going forward in the hospitals, and to illustrate every subject, as far as possible, by a reference to cases which are actually under your inspection.

A short time ago, I amputated a limb in the other hospital, in a case of aneurism, which is extremely curious, and to which I am not sure that there ever has been a parallel. Some months ago, a man underwent the operation for aneurism; the femoral artery was tied; shortly after, the pulsation disappeared, and he was soon after supposed to be cured of the aneurism, and discharged. He returned to his work; but soon after a swelling arose in the ham, without pulsation. The swelling subsided in consequence of rest: but a few weeks ago, while the man was at labour, the swelling returned with great pain, which increased during the time he was in the hospital; and, as there was no prospect of his recovering a useful limb, amputation was resorted to. In this case I found the femoral artery below the place to which the ligature had been applied was conveying blood. As it was impossible that the femoral artery could be pervious, the blood must have been conveyed by anastomosis. It does now and then happen, that a blood vessel will arise from the artery just above the ligature, and pass into the artery immediately below the ligature; by which means the circulation is produced. There is a beautiful specimen in the collection, where the brachial artery had been tied, and blood was conveyed by a vessel not more than three inches in length, from the part just above to the part just below the ligature. This now and then occurs after the operation for aneurism, anastomosis happening where it is not usually found, from a short vessel running from one portion of the artery to the other.

The other subject, to which I mean to call your attention, is the experiment which I made on an animal last Friday, in the other hospital. This experiment, gentlemen, delighted me; I do not know that I have ever experienced greater pleasure in my life than I felt in going home from the hospital on that day. With respect to antidotes against the effects of poison, it is well known that they are, in a great degree, useless. It is impossible, for instance, to get rid of arsenic from the stomach by any remedy that can be administered. It is doubtful whether any man

ever recovered from the effects of that poison by means of an antidote. So with respect to opium; when it is taken into the stomach in such large quantities that vomiting cannot be excited, the patient cannot be relieved by the exhibition of medicine; for where is the antidote against the effects of opium? A few weeks ago, a nurse in this hospital died in consequence of having swallowed opium. No relief was exhibited to her; but can it be said, after what we saw on Friday, that no relief *could* have been administered to her? A short time since, a patient died in the other hospital, under similar circumstances; the quantity of opium taken being so large, that vomiting could not be excited by any means which were employed. I was myself, on one occasion, called to a young lady who had taken two ounces of the tincture of opium. It was ten o'clock in the morning when I first saw her; she was then comatose. I tried to excite vomiting by the sulphate of copper, giving it in as large doses as I could venture to administer; which I have sometimes known to succeed when all other means have proved ineffectual. It was however, unavailing in this case, and I sat by this young lady from ten o'clock in the morning, until eight in the evening, watching the regular process to death, without being able to administer to her the least relief. Let me ask you then, gentlemen, whether an experiment of this kind is not in the highest degree interesting, and whether we are not infinitely indebted to the man who first suggested the means of administering relief under such afflicting circumstances? I am happy to tell you that the gentleman to whom we are indebted for this suggestion is now present; that he is ready to have the experiment made upon himself, and that so confident is he of the success with which it may be applied, that he would have no objection, if I could permit it, to take a large quantity of the tincture of opium in your presence this evening. I suggested, however, that a little coloured water would answer all the purposes of illustrating the use of the instrument. The syringe, which was brought to me the other day by a very ingenious man, Mr. Reed, of Kent, is entirely a new invention, nor do I think the merit of that individual in the least degree diminished by what I have since learned. The application of the syringe to the stomach, in cases of poisoning, is due to a gentleman whose name I shall presently mention. Mr. Reed's syringe is a new contrivance, which has been formed upon a principle in hydraulics (first applied, I believe, by Mr. Bramah) and which is capable of increasing the force of the instrument to the greatest possible degree. To give you an idea of its force: if I were to stand on a piece of wood, and the wood were surrounded by anything which would prevent the escape of the water, the force of the syringe is capable of raising me from the ground. I do not wish to commit myself by any observations

on a subject with which I do not pretend to be particularly conversant; but I believe, gentlemen, the principle is this: When a fluid contained in a vessel, having a large diameter, is thrown into one of very small diameter, the result is, an exceedingly great accumulation of force.

Thus we see that piles which are driven into the beds of rivers, by the force of immense weights acting upon them, are raised by the admission of a very small quantity of water under them, upon the principle which I have just stated. Mr. Reed's syringe is formed upon this principle, and the valves are besides different from any which had been previously employed in similar instruments. With respect to the medical application of the syringe, however, for the purpose of removing poisons from the stomach, we are indebted for it to Mr. Jukes, a surgeon at Pimlico, who published an account of it in the *Medical and Physical Journal* for November, 1822, p. 285; and a further account in the same Journal for June, 1823. Mr. Jukes originally employed a gum-elastic bottle to be applied to the tube: but the improvement of a syringe was suggested by Mr. Bush, of Frome.

LECTURE XV.

TREATMENT OF GANGRENE.

In the last lecture we defined gangrene as a partial death; we described to you the symptoms which attended it, when it was the result of high and active inflammation, and when it was the result of a low degree of heat.

We shall now proceed to consider the treatment which is usually employed to prevent gangrene, and to arrest the sloughing process. You must endeavour to soothe the parts by the application of leeches, with a view of checking the excess of action. It generally happens, in cases of gangrene, that the body will not bear any considerable degree of depletion; but local depletion, by means of leeches, may be safely resorted to. Thus, in compound fracture of the leg, for instance, gangrene may be prevented by the application of leeches, when it would not be equally safe to take blood from the arm. Soothing applications, such as poppy fomentations and poppy poultices, should be employed to subdue the excessive action which threatens the destruction of the life of the part. It will be necessary, at the same time, to attend to the constitutional treatment of the patient. In this metropolis, it is seldom safe to take blood from the arm of patients to prevent gangrene. In the country a different practice may be pursued; and it will frequently be necessary to take away blood in erysipelas, and other cases, in which we cannot and dare not deplete in town, where the constitution of patients is broken by

intemperance, or enfeebled by deteriorated air. When you take away blood, however, to prevent gangrene, do not take more than eight or ten ounces, lest the vigour of the circulation, and consequently the nervous powers of the constitution, should be too much diminished. Two or three grains of calomel should be given at night, with a view of restoring the defective secretions of the intestinal canal and the liver; and the liquor ammoniæ acetatis, with a few drops of the tincture of opium, should be given several times in the day. By the calomel you restore the secretions; and by the opium you tranquillize the system and diminish the irritability which leads to the destruction of the life of the parts. Do not begin by stimulating the constitution too much in cases of gangrene. The effect of opium may, in some respects, be similar to that of taking a stimulus into the system, but it is by diminishing excessive action, at the same time that it increases the strength of the body, that opium becomes so valuable a medicine in these cases. The best means, therefore, of preventing gangrene, are to restore the secretions by calomel, and to diminish irritability by opium, and, in some cases, by taking away very small quantities of blood.

If the gangrene arise from the application of cold, the treatment must be different. In these cases the action of the parts is feeble from the diminution of nervous power, and it will be proper to restore it to a healthy state by stimulants of the most gentle kind. For this purpose, the best application is the camphorated spirit of wine, accompanied with gentle friction. If you are called to a patient whose feet are benumbed by the application of cold, you must sit by his bed-side, pour the camphorated spirit into your hand, and rub it on his feet with the utmost possible gentleness, so that the part may not be irritated by violent friction. When the first effects of cold are removed, it will be proper to apply poultices to the part. The poultices must be cold, for warm applications to the part are to be carefully avoided. One of the most valuable of our nobility died of gangrene from an imprudence in this respect. He was out shooting in December last, and his feet having become benumbed, he put them into warm water as soon as he returned home. The consequence was, that his toe became gangrenous; the gangrene soon extended to the other foot, and he died from its effects. When parts are frost-bitten in colder climates, you are aware that the common practice is to restore the circulation by rubbing them with snow.

So much for the prevention of gangrene.

But as soon as gangrene has commenced, it will be necessary to apply a gentle stimulus to the parts, with a view of supporting the action of the surrounding parts which are threatened with the destruction of life. The application which I have found to be most uniformly successful

in such cases, is the poultices of stale beer grounds. The stale beer grounds, which may be obtained in any public-house, should be mixed with linseed meal, and a poultice formed of them, which will produce a gentle and beneficial stimulus to the part, and prevent the gangrene from spreading to the surrounding skin. Spirituous fomentations are also of use for the same purpose. At the same time that this local treatment is employed, means must be taken to support the constitution, which is debilitated by excessive action. The best mode of supporting the constitution is by the exhibition of ammonia mixed with opium. From seven to ten grains of the carbonate of ammonia, with twenty drops or half a drachm of the tincture of opium, should be taken two or three times a-day, or even more frequently, as once every four hours. This plan will generally prevent the extension of gangrene. Bark was formerly extolled, as possessing great virtue in cases of gangrene; but it is doubtful whether it does not do as much harm as good. For the first two or three days the patient feels comfortable, and his health is improved by its exhibition; but after a short time his stomach becomes loaded and oppressed. It first makes him costive, and then purges; and after a little time we are obliged to suspend its use. I am much disposed to try in these the new form of this medicine, which agrees so well with the stomach; I allude to the sulphate of quinine. It is my intention to give it a full trial in the first case of gangrene which I meet with; and I recommend you to try it yourselves in the cases of gangrene which may come under your observation. An excellent medicine used in the other hospital is a bolus of five grains of the carbonate of ammonia, with ten grains of musk, given every four hours. I have seen this medicine produce the best effects in sloughing sores in the foul wards, and in gangrenous sores, where the gangrene was much disposed to spread. The musk has the effect of keeping up the stimulus of the ammonia, which is apt to subside after a few hours, when the ammonia is exhibited alone. A port wine poultice is an admirable application in these cases. I mentioned to you, a few days ago, the case of a girl in the other hospital, who had a gangrenous sore in the pudendum, where a great variety of applications had been tried without any beneficial result. At last a port wine poultice was applied, and with such immediate good effects, that, though I had before despaired of her life, the last time I saw her the sore was brought into such a healthy state, that there are great hopes of her recovery. Applications of turpentine are often of use in these cases, for the purpose of stimulating the parts. After great want of circulation in any part, from the course of the blood having been arrested, sloughing sores are very apt to occur. Thus, after the operation of tying the femoral artery, if the limb be suffered to

rest in the same position for a considerable time, a small gangrenous spot frequently appears. In such cases the spirit of turpentine is the best application. Yeast is often applied with the same view. A lotion much used in the other hospital, for this purpose, is the formula which used to be called the epithema lythargyri acetatis, but now called the epithema plumbi subacetatis.

The following is the mode of preparing it:—

℞ Confect. Ros. ℥j.
Mcd. Rosæ.
Tinct. Opii.
Liq. Plumbi Subacet. } āā ʒjj. M.

This is an application which accords extremely well with limbs in a state of gangrene, when the dead are separating from the living parts; it is a very useful application then in gangrene. During the sloughing process, the nitric acid is the best application that can be used: when the gangrene stops, and the line of demarcation is drawn, and the sloughing process is commencing, the nitric acid may be employed in the proportion of fifty drops to a pint of water. I have seen very good effects from an application composed of vinegar and camphor mixture, about four ounces of the vinegar to twelve ounces of the camphor mixture; I have seen this of service when no other application had been used, as in the case of a gentleman at Peckham, whom I attended with Mr. A. These are the different modes of treatment for the prevention of gangrene, and the arresting of the sloughing process.

ON THE PROPRIETY OF AMPUTATION IN GANGRENE.

As to the propriety of amputation—there is no occasion in general for amputation in cases of gangrene when the sloughing process is going on, as you have an opportunity of seeing in the man at the other hospital, where nature has performed the operation herself, without any assistance; if the surgeon will be content to wait a short time, and the patient is disposed also, you will find that the parts will separate as well without as with an operation. Now the old surgeons, who observed nature well, adopted the very same plan in their amputations as nature pursues in these cases; the skin separates the longest, the muscles next, and then the tendons, together with the bones, which are left considerably shorter than the rest, as you may observe from the specimen on the table. When bones ulcerate, the tendon soon separates, and the bones become covered in by skin and muscle; the limb, however, before me, was amputated. The cases in which you are called on to perform the operation of amputation are when the patient will not be able to sustain the shock to the constitution; then, gentlemen, if gangrene be going on

in any part, or through the middle of the leg, by which the power of the constitution will be nearly destroyed, you may have recourse to an operation; but even here there will not always be occasion for it. You have an opportunity of seeing in the other hospital at present, in a case to which I have so often alluded, separation taking place above the centre of the leg; there is no necessity to amputate always under such circumstances, and you can give the patient a chance of his life, without resorting to it, if he dread the knife.

I say, gentlemen, *in constitutional gangrene*, never amputate till the sloughing process has commenced, and healthy granulations are to be seen on the sore; for if an operation be performed, the parts will assume exactly the same appearance after as before it. It is curious to see how the loss of a slight quantity of blood will destroy life in these cases. When I was a dresser at these hospitals, during my apprenticeship, a case of sloughing opposite to the calf was brought in: Mr. Cline, my old master, on going round the wards, said to the dresser, that the projecting ends of the bone had better be removed. There were some granulations between the bones, which, in sawing them off, the dresser did not observe, and therefore cut through them; little hemorrhage ensued; no ligature was applied; yet, on the same night, the patient died. There was a case under the care of Mr. Forster, in the other hospital, on which he performed the operation of amputation: there was gangrene on one foot, a slight gangrene on the nose, and the other foot. The leg was amputated; but the infection spread in the nose and foot, which, before the operation, were slightly gangrenous: then, gentlemen, it is proper to consider that amputation should never be performed till the constitution is in a sound state, and healthy granulations have appeared.

But with respect to *gangrene* from *defective action*, or *accident*—

When called to a person labouring under gangrene, arising from accident or pressure on some important vessel, amputation may be performed without the least hesitation. A girl was brought to this hospital, who, in endeavouring to reach something from the chimney-piece, trod on the fender, which turned over on its edge, and she fell backwards; there was a compound dislocation of the elbow-joint, together with a wound of the brachial artery; this vessel was tied by the dresser, hemorrhage was arrested, gangrene soon afterwards appeared in the finger, when, nine days from the accident, the operation of amputation was performed above the elbow-joint, and the patient did extremely well. A man was brought to Guy's, from Woolwich, with popliteal aneurism: the aneurism had acquired a great size; there was a gangrenous state of the limb below, so that it was thought there was no chance of saving his life by tying the artery; therefore amputation was performed.

Before the operation the pulse was from 120 to 130. In the evening, after the removal of the limb, I sent Mr. Callaway, who was my apprentice at that time, to see how the patient was doing; he found that the pulse had fallen to 90; and no stump that ever came under my care turned our more favourably. Thus, instead of increasing the irritability of the constitution, the source of the irritation being removed, the health of the patient became improved.

OF GANGRENE IN OLD PERSONS.

We often find old persons afflicted with gangrene, from very slight causes, and particularly those who are tall. The heart being naturally weakened by age, the circulation becomes extremely languid in the feet; hence, mortification of the toes ensues. The appearances which the part assumes are these:—at first it is red and painful; the person, thinking little of the matter, puts upon the affected part a piece of linen; in a few days the cuticle comes off, and there issues from the surface a sanious discharge; red streaks are now seen passing from different parts of the foot up the leg; and the glands in the groin often undergo considerable inflammation and enlargement; all the absorbent vessels of the foot becoming inflamed, produce universal redness of the diseased member. Soon after this the gangrene begins to extend, destroys the whole of the foot, and passes to the upper part of the leg, where it usually stops, as it seldom reaches the thigh; the constitution becomes considerably influenced; there is some degree of fever, and the cheeks are of a florid red colour. This gangrene will not commonly destroy life, if attention be paid to the patient. It generally arises from ossification of the arteries—not of the large vessels, but of the small. These losing their elasticity, combined with a debilitated action of the heart, give rise to the disease of which I am now speaking. The earthy matter is sometimes deposited in great quantities in the large vessels; and here (*showing a preparation*) is an example, in which the deposition of earthy substance has rendered the principal arteries of the leg, and even part of the femoral artery, impervious.

I recollect some time ago a very intelligent surgeon telling me, that he thought a certain nobleman, whom he was at that time attending, had ossification of the arteries of the leg, and that it would some day give rise to gangrene—of which gangrene his Lordship has since died.

Where ossification of the blood-vessels exists, very slight causes will give rise to gangrene. A gentleman of the city, in cutting a toe-nail, carried the knife too far, and cut the quick, as it is termed: the wound soon became gangrenous and black, and in the sequel he died. I at-

tended a gentleman, an old surgeon, who, for the purpose of getting rid of a bunion, had (most foolishly) put a lancet into it; gangrene followed, and he died. I was lately sent for by Mr. Holt, surgeon, of Tottenham, to see a gentleman, who, when cutting a corn, had carried the incision a little too far, so as to produce bleeding: gangrene here likewise took place. Old persons must, therefore, be cautious how they finger their toes—(*a laugh*); for life being almost out, very little will prove a complete extinguisher.

A poultice, composed of port wine and linseed meal, will generally be found the best *local* application: and your *internal* remedy should consist of opium combined with ammonia. You must not expect that these cases will always recover. I have known, however, a single toe, a whole set, and even the entire foot, to slough, and yet the patient do well. In these cases you must never amputate—whether there be healthy granulations or not, do not amputate; for as surely as you do, mortification of the stump will supervene.

The next subject of which I shall speak is

CARBUNCLE.

Of this I shall have but little to say, as many of the foregoing observations are equally applicable here.

When carbuncle is about to take place in any part, it is generally preceded by pain, and at first a swelling of considerable hardness; this is occasioned by the adhesive inflammation; the surface of the tumour then assumes a livid redness and a spongy soft feel; little ulcers now form in the skin, which, from their number, give it a sieve-like appearance, so numerous are the orifices: from these a white discharge passes—this fluid resembles water and flour mixed together: and a man who has seen much of carbuncle, knows the nature of the disease instantly upon seeing the discharge. When the little openings are all formed into one, the dead cellular membrane begins to escape, for it previously cannot do so, from the smallness of the apertures. In gangrene of the extremities there is not this mechanical obstruction to the sloughing of the dead part. And though gangrene is generally difficult to cure, yet carbuncle usually does well, except when situated on the head or neck. Though persons will recover from carbuncles of an enormous size upon the back, yet very small ones on the head or neck will often destroy life; indeed, I never saw a patient who recovered from carbuncle upon the head; in these cases there is effusion between the tunica arachnoides and pia mater. The inflammation which attends fistula in ano will sometimes destroy the cellular membrane of the neighbouring parts,

thereby occasioning an enormous quantity of the nates to slough, and yet the patient shall do well.

Treatment.—The peculiar treatment of carbuncle consists in making upon the surface of the swelling, at an early period of the disease, a large crucial incision, for the purpose of affording the deadened parts an opportunity of escaping; then apply the port wine poultice, and give the patient such stimulants as will tend to increase the vigour of his constitution, and here we shall again find opium and ammonia our sheet anchors.

OF ERYSIPELAS.

Inflammation of the skin is generally extensive. Why? In consequence of the surface being unbroken. Thus, when the pleura or peritoneum is attacked by inflammation, the whole of these membranes usually become affected by it; and also when erysipelatous inflammation invades the skin, it is not uncommon to see it run from one part to another, till half the body is covered by it. Sometimes it is ushered in by fever, and sometimes not. Certain constitutions are sooner affected by it than others, and often its effects appear to be entirely local. But unquestionably it affects the constitution more frequently than otherwise. Its characteristic appearances are, a florid skin, with vesicles containing a secretion of an amber colour under the raised cuticle. It is seldom that the skin suppurates in these cases; the cellular membrane, however, occasionally does. It is very common for erysipelatous inflammation to terminate in gangrene. You must not consider all cases of inflamed skin erysipelas. I have often seen cases treated as such, where it would have been right to deplete. The best characteristic sign is its vesicular appearance; and this constitutes a specific difference between it and common inflammation.

The head seems to be more commonly affected by it than any other part; it often succeeds the most trifling injury of the scalp; and, like carbuncle, when it occurs in this situation, generally destroys life. I had the misfortune to lose a lady of considerable consequence from its effects, where it came on after the removal of a small encysted tumour from the forehead. It made its appearance three days after the operation, and all the exertions of Dr. Baillie and myself were unable to arrest its progress. Thus a trifling operation on the scalp destroyed life, in consequence of having been succeeded by erysipelatous inflammation.

After a person has once had this disease, he is very subject to it again; and some persons appear to be predisposed to its formation.

It generally makes its appearance in spring and autumn, but seldom

in winter, and not very often in summer. Whatever renders the body irritable predisposes to erysipelas. In hospital practice, surgeons were formerly exceedingly afraid to operate in autumn and spring; for it has often happened that the stimulating effects of adhesive plaster have produced this disease, and have led to the death of the patient. Sometimes it is epidemic, and sometimes contagious.

Treatment of Erysipelas.—In this town the following plan is pursued, and which, *for London*, is undoubtedly the best:—You at first give calomel, for the purpose of restoring the secretions of the liver and intestines; then allow a generous diet, and administer the ordinary tonics; or, from what I have witnessed, I would advise you to try the sulphate of quinine; it is a most powerful tonic, excites in the stomach a genial warmth, and will often remain in that organ when bark will not.

Dr. Marcet, now deceased, but late a physician of Guy's, endeavoured to ascertain whether the antiphlogistic or tonic mode of treatment was best for this disease; therefore he put two persons, having erysipelas, into adjoining beds; to one of whom were given tonics and a generous diet; to the other, salines and low diet; blood likewise was abstracted from the latter; they both recovered, the former rapidly, while the latter lingered in a debilitated state for a very considerable period. You will find, where erysipelas attacks the lower orders of this town, who weaken their constitutions by the excessive use of ardent spirits, that gin may be sometimes advantageously employed as a remedy, at once being the evil and its cure; the last two cases of this disease which I saw in the other hospital, prove the truth of what I am now saying: a man had erysipelas dreadfully severe; his head swollen to an enormous size, and his recovery, by every person, thought impossible. It was discovered, one day, that his wife brought him some gin. He declared that he was better from having drank it, was consequently permitted its continuance, and, to the astonishment of all, he rapidly got well.

Not six weeks after this, there was another man, similarly circumstanced, brought into the same ward; and having, from the result of the above case, formed a high opinion of gin (*a laugh*), I directed the sister to give it here also; and really this patient recovered as speedily as the former.

LECTURE XVI.

ON INJURIES OF THE HEAD.

Before I proceed to mention these, I will give you a brief account of the nervous system; a correct knowledge of which, however, can only be acquired by assiduity in the dissecting-room. The nervous system is composed of the following parts, viz. brain (which is divided into cerebrum, cerebellum, and medulla oblongata), medulla spinalis, and two sets of nerves—one set issuing from the brain, and the other from the medulla spinalis. Beside these, there is also the grand sympathetic nerve, which may be said to form a system in itself.

The nerves are freely distributed to every part of the human frame, and are the means by which all voluntary and involuntary motions are maintained. It is impossible that a mere description of the nervous system, in this place, however minute it might be, could make you sufficiently acquainted with its anatomy; for this can only be obtained by the most careful and attentive examination of the dead body. It is necessary, however, for you, at this moment, to bear in mind, that an immediate communication exists between the stomach and brain, by means of the eighth pair of nerves, or par vagum; for, unless you do this, it is probable that an important symptom, which I shall presently mention, attendant on injuries of the brain, will be but imperfectly understood. There is also another circumstance connected with the brain, to which I wish particularly to direct your attention, viz. its being the vehicle of the mind; or, rather, I might say, the medium through which the mind is communicated. The influence of the brain on the mind, and *vice versâ*, will be amply demonstrated to you as I proceed.

Now, when the brain receives an injury, the symptoms stated to be the result of that injury are, general loss of sense and volition, if the injury be considerable; but if not so severe, some portion of sense and volition will remain; for example, when you are called to the bed-side of a person thus situated, you find him to be what is termed comatose. If you speak sharply to him, he becomes roused for the moment, mumbles some brief answer to you, again lays down, and relapses into his former sleepy state: thus you observe partial mental faculties and volition still remain. This state you should minutely note, as it will greatly assist you in your after diagnosis; and you must be upon your guard that you are not deceived here; for a man in this condition very much resembles one in a state of intoxication; and this similitude often proves exceedingly harassing to the surgeon. He is probably sent for to a person, who, it is stated, has received a severe injury of the head. He finds

him with a very severe laceration of the scalp, together with stupor, and sometimes even stertorous breathing. Not knowing that the individual was intoxicated at the time of receiving the injury, the surgeon attributes the above symptoms to concussion or compression, when, after a few hours, the person recovers from his drunken fit, and it becomes apparent that he received no other mischief than a wound in the scalp.

In addition to loss of sense and motion, the fæces involuntarily pass off, from the sphincter ani losing its retentive power through the sympathetic influence of the great sympathetic nerve—the voluntary power of the bladder becomes for the time extinct—the urine is retained, and you are obliged to pass a catheter for its removal at the very time when the escape of the fæces cannot be controlled. But the involuntary functions of no organ are so soon affected by injuries of the brain as those of the stomach; this arises from the connexion before explained to you; vomiting, therefore, is one of the first symptoms, though the fæces pass involuntarily, yet there is such torpor of the intestinal canal, that purgatives will not easily excite action, and there will be found considerable difficulty in procuring evacuations; the pulse is said to beat laboriously; for the heart being affected, it cannot readily get rid of its contents. The pulse, however, is not slow, unless the body be at rest: for upon the slightest exertion it becomes exceedingly quick; the pupils are dilated, and there is sometimes bleeding from the nose, which, when the patient has been kept lying on his back, often occasions vomiting of blood; when the injury has extended to the basis of the skull, producing fracture there, it is generally attended with bleeding from the ears. These cases are very dangerous, and persons usually fall victims to them. In addition to the symptoms already enumerated, there is often partial paralysis, or hemiplegia; squinting is occasionally produced; the natural direction of one or both eyes becoming changed; permanent, partial, or total aberration of the mental faculties may also be added to the consequences already enumerated, arising from injuries of the brain.

When asked to explain the difference between concussion and compression, you answer, concussion is simply a shock which the brain has received, more or less severe, attended with laceration or not: and compression arises from either a depressed portion of bone, the extravasation of blood, or the formation of matter: and from whichever of these it springs, the symptoms will be the same.

In describing the symptoms and treatment of these diseases more particularly, I will first begin with *Concussion*. When called to a person whom you find in a state of stupefaction, but not to a great degree;

regular pulse, tranquil and regular breathing; and the accident has existed some hours, you will generally be justified in pronouncing that the injury has been trifling: but when the individual has been first seized with vomiting, is incapable of using any muscular power from loss of nervous influence; a total aberration of the mental faculties, with intermittent pulse and breathing, these will be found the diagnostic symptoms of severe injury, and the case a dangerous one. In simple concussion, where the derangement is not so extensive as that just described, and where the patient, upon being spoken to, raises himself, as if awoke from a sound sleep, and where some power of volition still remains, you will find one of the best diagnostic symptoms to be the accelerated action of the pulse upon the patient exerting himself; a man in this state with a pulse at 70, on being raised, or attempting to walk, will have it inordinately quickened, it will instantly beat 130 in a minute; this is a never-failing symptom, and where the patient can be made to exert himself at all, will be found a sure characteristic of the disease. There is also in these cases a greater action of the carotids than in health; they beat more violently, though not more quickly, if the patient be at rest; if asked what are the best marked symptoms of concussion, I should say this increased motion of the carotids; the apparent tranquil sleep; the instantaneous relapse to that state after having been roused; the remarkable excitement of the pulse upon using exertion, and insensibility having immediately followed the injury.

The diminution of the operations of the mind is often so great in concussion, even where considerable voluntary motion remains, that you cannot, even by hallooing as loudly as you are capable, get any other answer from your patient, than 'eh!' delivered in a gruff under-tone. I have known several very curious circumstances of this kind;—one case was that of a gentleman who had met with an injury of the head, by which concussion had been produced—every endeavour to get a word from him was ineffectual; yet, at one period, when the attendants were all absent, he got out of bed, bolted the door, made water, and returned to bed again, in the same manner as though he had been in perfect health: when the servant went back, he found the door fastened; all their knocking was unavailing; they were obliged to break it open, and then could not procure from him a single word. Indeed, I do not believe the noise of an earthquake would have succeeded in rousing him from his lethargy; yet he could get out of bed, pass his urine, and adopt his ordinary habit of delicacy, by bolting the door. I have caught a man, when labouring under the effects of concussion, with his feet in a chamber-pot, and by the action of his hands, it was evident that he was trying to throw water over his legs; upon the servant going into

the room of the same individual some days after, he was found to be attempting to shave himself, and having no lather, he substituted a pot of spermaceti ointment, which he had brushed all over his face.

I suppose you have all heard of the extraordinary change which the memory sometimes undergoes from the effects of concussion. The first story of this kind that I ever heard was from Mr. Cline. A man was taken to Guy's, in a state of insensibility, in which condition he remained for some time, but at length recovered; and when he did so, no person in the hospital could understand his language; a milk-woman happening to go into the ward one day, heard him, and discovered that he was speaking Welch: he told her that he knew English well before the accident, but after it all knowledge of that language was obliterated from his mind. It had been recently acquired; the impression was less strong, and consequently the more easily effaced.

I witnessed a similar circumstance in the case of a German, who was a sugar-baker in this town, and who had compression of the brain, arising not from any injury by violence, but from pressure in consequence of the formation of matter. This man could speak English extremely well before the compression; but as the compression increased from the accumulation of matter, he lost his English entirely, and I could only communicate with him through the medium of an interpreter. At last he lost the power of speaking, even in his native language, and he died in consequence of the accumulation of matter. It is curious to observe the gradual change which takes place in the intellectual faculties, as alterations occur in the brain; and the gradual diminution of ideas which have been more recently acquired, until at length they become totally obliterated. Old persons are observed to be fond of relating anecdotes of their youth, forgetting incidents of more recent occurrence; and the change which takes place in the intellect from injuries of the brain is very similar to the effects of age. The patient becomes, as it were, suddenly old, loses impressions of a recent date, and is sensible only of those which he has received in his earlier years. Such is the state of mind very frequently produced by compression of the brain.

With respect to the state of the brain under concussion, when the concussion is not extremely violent, there is merely a change in the circulation of the brain.

A sudden shock will so far disturb the circulation of this organ, as to produce diminution of the powers of the mind, as well as to impair the functions of the body. I shall have occasion to mention to you a most extraordinary case, in which the functions of the mind were suspended from an interruption of circulation in the brain, for upwards of thirteen

months; the patient having, as it were, drunk of the cup of Lethe during all that period. Any change of the circulation in the brain alters, in some degree, the powers of mind and body; but if the agitation be very considerable, the powers of the mind will be for a time suspended. Thus, when a person is said to be stunned, there is a sudden alteration of the circulation in the brain, and a corresponding loss of sensibility; but when the circulation is restored by the means which I shall presently point out to you, the powers of the mind return with those of the body. When the concussion is very violent, a lesion of the brain takes place; but when it is slight, no appearances can be discovered on dissection, which indicate any alteration of structure. A person may die from another injury, accompanied with concussion; and on examination after death, not the least alteration may be found in the brain. This is not the case, however, where the concussion is violent. I have before me a great number of preparations, from the brains of patients who have died of concussion, in most of which that organ was considerably lacerated, and some extravasation of blood is observable within the brain. (Several beautiful specimens of lacerated brain, accompanied with extravasation of blood, were exhibited to the class.) These specimens show the effects produced by severe concussion. I remember a case of a gentleman, an intimate friend of the late Lord Nelson, who fell from his horse at the corner of St. Thomas's-street, in the Borough. He was immediately taken to Guy's Hospital, where he was found to have all the symptoms of concussion, and he was treated in the usual manner. On examination of the body after death (for he died eight days after the accident), the brain was found to be lacerated in several places, and considerable extravasation of blood had taken place. In general, therefore, when the concussion is slight, there will be only an alteration of circulation in the brain; but when it is severe, there will be laceration, accompanied with extravasation of blood, and the symptoms will be found to run into those of compression. The first case in which I ever saw the brain lacerated from concussion, was one which occurred at the other hospital, in the first year of my apprenticeship, when I was a dresser to Mr. Chandler. As this was the first case of the kind I had seen, I preserved a portion of the brain. The patient had lost the power of speech from a blow on the head; but there was no appearance of any wound or injury to the skull. Mr. Chandler attributed the loss of speech to concussion. On examination of the body after death, it was found that the anterior lobe of the cerebrum was torn, the first effect of which injury was the loss of the power of utterance, or rather a paralysis of the muscles, which deprived him of the power of speech, and subsequently compression and inflammation, of which he died. When

you are asked, then, as to the effects of concussion, as they may be collected from the appearances on dissection, you will answer, that when the concussion is slight, it is merely an agitation of the brain, by which the circulation is altered; but when it is severe, the brain itself suffers laceration, which laceration is accompanied with extravasation of blood. By the knowledge of these facts we are led, without difficulty, to the principles of treatment.

Treatment of Concussion.—The great danger which we have to guard against, in the treatment of concussion, is inflammation of the brain. This principle must direct our practice; and in order to prevent inflammation, we must take away a very considerable quantity of blood. By bleeding largely at first, we not only remove existing inflammation, but we prevent that which would otherwise occur. This practice, however, may be carried to excess. There are some persons who say you cannot bleed too much in these cases; but such an assertion only proves their want of understanding. You must regulate your conduct by the symptoms; observe whether there be any hardness in your patient's pulse, and whether he complains of pain in the head, if he have still the power of complaining; watch your patient with the greatest possible anxiety; visit him at least three times a-day, and if you find any hardness of the pulse supervening, after the first copious bleeding, take away a tea-cupful of blood; but do not go on bleeding him largely, for you would by this means reduce the strength of your patient too much, and prevent the reparative process of nature. It is necessary that there should be a slight degree of inflammation, for without this, the reparative process cannot go on, and the patient cannot recover; but it will be your duty to keep this inflammation within due bounds. I shall mention a case in which fatal consequences ensued from the error committed by the surgeon in bleeding his patient to such excess, that the slight degree of inflammation necessary to the process of adhesion was removed, and the reparative process of nature consequently prevented.

In these lectures, gentlemen, I feel it to be my duty to describe to you surgery as it is—and not in the glowing colours in which it is painted to you in books. You must be content to practice surgery as it is—not as it is sometimes fallaciously represented to you. I am most anxious that you should omit nothing which may contribute to increase your professional skill, and enable you to afford the greatest possible sum of relief to the sufferings of your patients; but they who blazon forth our profession as one which is attended with undeviating success, are only deceiving you. You must hear the untoward cases of your profession, as well as those of which the issue is favourable, in order to form a cor-

rect judgment in your minds of what your profession really is. It is for these reasons, gentlemen, that I shall never hesitate, *coute qui coute*, to detail to you, and perhaps to the public, those causes which have terminated unfavourably. I have a duty to perform, and I shall never shrink from the discharge of it. It is by detailing to you the unfavourable as well as the favourable cases, that I can alone perform that duty; for it is by such a course alone that I can point out to you the rocks which you are to avoid, as well as the havens in which you are to endeavour to anchor. The case to which I last alluded was one of concussion, accompanied with slight laceration of the brain, which occurred in the other hospital. The gentleman under whose care the patient was, thought it right to bleed him, and that he could not bleed him too largely. He accordingly bled, not only from day to day, but twice a day. The consequence of this mode of treatment was, that the patient became perfectly pale, was in a state of considerable dejection, not of the mind, but of the powers of the body, and died without any symptoms of inflammation, ten days after the injury. On examination of the body, it was found that there was a slight laceration of the brain, with some degree of extravasation of blood, but that not the slightest attempt had been made by nature to heal the wound. You are aware that the brain heals like any other organ, by the process of adhesion; but in this case, the quantity of blood taken from the patient was so large, that the slight inflammation necessary to the adhesive process was removed, and the process of restoration consequently prevented. Still it is often necessary to take away blood, after the first large bleeding; but it must be taken in small quantities, and you must watch the patient with the greatest possible anxiety, for the symptoms can alone regulate your practice. Sometimes it is necessary to take away large quantities of blood. I was called to a gentleman who had fallen from his horse in riding to London. I found him insensible on my arrival. Mr. Constable, who attended him, had already bled him, but I judged it necessary to bleed him again largely; and I took blood in smaller quantities from him day after day, watching the pulse with the greatest anxiety, and bleeding him only so far as to reduce the hardness of the pulse without diminishing too much the powers of his body. The whole quantity of blood taken from this gentleman, by bleeding from the arm, opening the temporal artery, and the application of leeches, as far as this could be estimated, amounted to about two hundred and eight ounces of blood. One hundred and eighty ounces were taken from the arm; yet such was the hardness of the pulse, that at the last bleeding there was some degree of inflammation of the brain indicated.

You are to use bleeding as a means of preventing inflammation; but

you are not to resort to it as a matter of course, the moment you are called to a patient under concussion. A man falls from his horse, and the instant he is picked up from the ground, some surgeons think it necessary to take the lancet from their pocket. This conduct is quite irrational; for supposing the pulse could scarcely be felt at the wrist of the patient, and the surgeon were in such a case asked why he proceeded to bleed? what would his answer be? The probability is, that he would have no answer at all ready; or he would perhaps say, that he bled him because the accident had brought a great quantity of blood to the brain, as if the shaking of the head could have any effect in producing a determination of blood to the brain. It is not with this view that we bleed in concussion, but in order to prevent inflammation. I have seen many a patient who would have died if a large quantity of blood had been taken at the time of the accident. This was the case with the gentleman who was attempting to shave himself, whose symptoms I described to you this evening. When I first saw him, his pulse was scarcely perceptible. I took a little blood from the arm, and he was immediately seized with convulsions, like an epileptic fit, which I thought would have proved fatal. I closed the wound, and I would not upon any account have taken six ounces of blood from him at that moment. Some time ago I saw a man, at the other hospital, who had received a blow on the head. He was pale and dejected, and his pulse could scarcely be felt. I said to the dresser, you must not bleed this man at present: there is rather too little action than too much; wait till the pulse rises, and then bleed him. In the evening re-action took place; the pulse rose, and the dresser then very properly bled him. Inflammation was by this means prevented, and the man did well. The principle upon which you should act, gentlemen, is never to do any thing in your profession without a good reason, which, whatever may be the result of the case, will leave your conscience clear. A surgeon who bleeds without being able to assign any other reason than that his patient has received a blow, is not fit to practice his profession.

The next remedy I come to is emetics.

I must say that I have seen emetics of considerable use; the vomiting produced by them does good. I have always considered the efforts of nature to relieve herself after injuries salutary; and thus the vomiting which is excited in cases of concussion, acts beneficially by relieving the stomach of its contents, as the accident generally happens to persons in a state of intoxication; and also by propelling the blood to the brain, and thus restoring the powers of life. But the vomiting excited by nature restores the patient to his senses for a short time. He is sometimes relieved, but without continuing so long; he looks about, and

lapses into his former state of aberration of mind, from which he had received merely a temporary relief. When emetics are exhibited as a remedy in concussion, there is only one thing that I fear from their use; when there is any extravasation of blood in the brain, or any tendency to apoplexy, then they should be employed with caution; and it is on that account that I wait for three or four hours after the accident before I order them.

With respect to the exhibition of cathartics, the bowels should be kept open by calomel purges, followed by the infusion of senna and sulphate of magnesia. The calomel should be given about two hours after the accident; and it will be useful to give to the patient at the same time a quantity of mild fluids to drink, as by this means a disposition to purging is kept up, counter-irritation, is, as it were, produced, and the blood is drawn from the brain to the intestinal canal. Submuriate of mercury, with lemon juice squeezed in water, should be given. Perspiration on the surface of the body is very desirable, and for this purpose antimonials are employed. The pulv. Ipec. Com. (Dover's Powder) is not generally used to produce moisture of the skin, on account of the opium it contains, as it confounds the judgment, and prevents your seeing what are the effects of the opium, and what those of the disease; for opium produces the same disturbance to the brain as takes place in concussion; therefore it is not often employed. Counter-irritation is of use, but not until other means have been resorted to; the object of blisters is to subdue the inflammation when other means have failed. I have known a patient, with pain in the head, sickness at the stomach, loss of strength, and throbbing of the carotids, who had been often relieved by blood-letting, for about two hours only after it was done. A person under such circumstances I have known benefited by the application of a blister; on the principle not of increasing but subduing action, from an excess of which the ill consequences are to be feared.

For the symptoms after concussion, the trephine used to be employed; but it now becomes a question whether it ever ought to be resorted to as a means of relief under those circumstances? To this I say, if you were to trephine, you ought to be trephined yourselves in turn. What will trephining do? Probably great harm, by disturbing the brain; and if not, no good can possibly result from it. Now for the proofs: first, that it does no good. Gentlemen, I never lecture to you but from the recollection of some case that has occurred to me. I was very intimate with a Mr. T., of Yarmouth, where I used to spend a good deal of time when a boy; after my apprenticeship was finished, I went down to this place, and I found Mr. T. labouring under the effects of concussion; his mind was not in the least affected; he had received a blow

on the forehead from a bludgeon, and he was afterwards frequently seized with sickness at the stomach. I called on him: and when I went into the room, I said, I come to ask you how you are: in approaching me he was obliged to put his handkerchief to his mouth to prevent the contents of his stomach going over me. In his walks he had frequent vomitings: a relation who was at Yarmouth twelve months after this, said to him, that he had better have the trephine applied, and the portion of bone removed: to which he readily consented. After the operation his symptoms were not relieved; he remained just the same; or I should rather say that he was not relieved, for he did not continue long in the same state; he soon got worse and worse; his bowels became costive, the powers of the mind affected, and he died in consequence of the operation, though he had lived two years after the injury, before it was performed. Mr. B., now in Yarmouth, was living with him at the time, and he could tell more of the particulars than myself; but this I know, that he was not benefited by the operation, but injured by it. But for a more direct proof that it is dangerous: Dr. Farre told me that he knew a person who was subject to epileptic fits after concussion of the brain, and that he was extremely anxious to be trephined. The operation of trephining was performed, and he died soon afterwards. Do not think, gentlemen, that I mention this as an uncommon case; but this used to be the plan adopted with almost all the patients admitted into these hospitals during my apprenticeship; they were all submitted to the operation; inflammation of the membranes of the brain supervened, and nearly all died; recovery being very rare. But do our patients now die from the effects of concussion? No; by bleeding and depletion we rarely lose a patient; perhaps we have fallen into the contrary extreme. After the expiration of my apprenticeship at these hospitals, I went over to Paris to see the practice of Desault, at the Hôtel-Dieu; and there I found that never, under any circumstances whatever, did he trephine; and that he was more successful than those who were constantly doing it here. Trephining in concussion is now so completely abandoned, that in the last four years I do not know that I have performed it once: whilst, thirty-five years ago, I should have performed it five or six times a-year. But I believe that I have omitted one circumstance; and that is, to tell you to pay strict attention to the mind; excessive anxiety must be prevented; for if you suffer the mind to be disturbed, you do little or nothing towards the recovery. I was very much struck, about twelve months ago, with an instance of this: a boy was brought to me from the north of England, who had lost a portion of the skull just above the eye-brow; and I was asked (for it was for this circumstance that I was consulted) what protection should be given to the denuded brain? On

examining the brain, I distinctly perceived the pulsation was regular and slow; but at this time he was agitated by some means or other; directly, the blood was sent with increased force to the brain the pulsation became more violent; therefore, if you omit to keep the mind free from agitation, your other means will be unavailing.

Lastly, the treatment of children. As you cannot always bleed them from the arm, you must give the submuriat hydrargyri (calomel) with mild drink, so as to purge them; leeches must be applied to the temples; you must open the jugular vein. For the symptoms after concussion, as pain in the head, or sickness at the stomach, you must make an incision through the scalp; put issues in; wash the head with spirits of wine and water, for this is better than any thing else I know; and use the shower-bath two or three times. These are the best means for giving power to the nervous system, and bringing the action of the brain into a healthy state.

LECTURE XVII.

ON COMPRESSION OF THE BRAIN.

We have to consider the causes which give rise to it, its symptoms, and the treatment which it requires.

When a person is labouring under compression of the brain, it is known by the breathing being stertorous, the pulse slow, and the pupils dilated; to which may be added the symptoms of concussion; when you then find a patient with the apoplectic stertor, slow pulse, dilated pupils, it will generally happen that the brain is compressed. The causes which produce compression are three: 1. Extravasation of blood; 2. Fracture with depression; 3. Formation of matter within the skull; these are the three causes which give rise to compression: we shall first consider compression when produced by extravasation. Now, gentlemen, when the brain is compressed by extravasated blood, the symptoms do not directly occur; the person at the time of the injury is often stunned; recovers himself, and a short time after falls into a comatose state, and then the apoplectic stertor begins. I will relate to you a case to illustrate this: a child was playing on a table, from which it fell on a stone floor, and received a severe blow on the head, which caused a compression of the brain; the child appeared to recover at four in the afternoon, the time at which the accident occurred being one; pain still continued in the head, the child cried considerably; it went to bed about two hours before its usual time; during the night, the servant was awoke by the apoplectic stertor of the child, which prevented

her from sleeping; when she moved it, the child was not roused; she discovered that it was ill, alarmed the family, and at eight in the morning it died: it was found after death, that a considerable quantity of blood was extravasated in the brain. The son of a most respectable merchant of the city was driving to his country-house at a short distance from town, in a one-horse chaise, when he was thrown out, and pitched with his head to the ground; he was stunned by the fall; he recovered a little, but looked very pale; he said that he was much hurt; a friend who was with him drove him home; in the evening he felt very heavy, laying the head on his hand; symptoms of compression of the brain came on; ten *p. m.*, the family was alarmed; medical assistance called, but at two the following morning he died, all efforts to save him being unavailing.

Extravasation with concussion renders the case of a different nature; then the symptoms of concussion, such as I described to you on a former evening, come on first, and the apoplectic stertors and other symptoms of compression succeed. Now for a case: A gentleman was at a party with some friends. He drank freely of wine, and became inebriated. His home was some distance from the place at which he was spending the evening; and his friends seeing that he would be exposed to great risk, wished him to stop, but he could not be prevailed on. He mounted his horse; and on the way was thrown off. He returned home; fell into a comatose state; symptoms of concussion first came on, loss of voluntary motion, at first no appearance of extravasation of blood was present; two, the following morning, apoplectic stertor came on; and at eleven he died. In this case, symptoms of concussion came on first, and those of compression afterwards. Blood was found extravasated in the brain, as might be expected. It is found, gentlemen, that the extravasated blood, producing compression of the brain, is generally situated in three different parts:—First, between the dura mater and pia mater. Second, between the pia mater and brain; and, lastly, within the substance of the brain itself. In this case (Sir Astley pointing to a specimen on the table before him) there was a considerable quantity (three ounces) the largest I ever saw effused beneath the dura mater. In this also (pointing to another) there was a large quantity extravasated opposite to the anterior inferior angle of the parietal bone and meatus auditorius externus; and the dura mater itself was torn. Second, between the pia mater and brain: this is of more common occurrence; and in this case a large portion of the brain will often be found covered over with blood, not that the quantity of blood extravasated is considerable, but a little is diffused over a large space. This portion of brain before me was taken from a man who fell, I believe, from the

yard-arm of a ship, and who was carried to the other hospital (Guy's), he died four hours after his admission; and on examination, after death, the vessels going from the pia mater to the brain were completely torn through. Third, within the substance of the brain itself; this (alluding to a specimen on the table) was taken from a person in the city, who had extravasation within the brain, from an accident; after the injury he considerably recovered, though pain still continued in the head; in three months afterwards he died, and on examination there was found in the anterior lobe of the cerebrum a coagulum of blood, no portion of which had been absorbed, as the surfaces close to the brain were quite smooth. These are the three situations in which extravasated blood is principally formed. I do not find any difference of symptoms produced by the different situations of the blood; the compression is produced by the pressure of the blood, and the quantity of blood effused will depend on the size of the vessel of the dura mater that is divided: whatever is the situation then of the blood, the symptoms of compression are the same: if there should be any blood resting on the origin of a nerve, there will be partial paralysis of the part which that nerve supplies. In the treatment of these cases there is little to be done. If extravasation of blood occurs with fracture, trephining may be of use. You should deplete freely, for the purpose of preventing inflammation: irritation is to be lessened, the bowels are to be opened, and the patient kept very quiet. If there is a bruise near the fracture, indicating the spot where the effused blood is, you may trephine, that is, before symptoms of excitement come on: when they take place, you must deplete only, and not dream of performing the operation; to do it under such circumstances would be highly absurd, and the height of madness.

ON FRACTURES OF THE SKULL.

Fractures of the skull are not of themselves dangerous, nor are they injurious to the brain; therefore these fractures do not call for any alarm, if care be taken to prevent the inflammation; the danger in these cases is to be apprehended from disturbance in some distant part, irritation of the system, or extravasation; it is not then, I repeat, from the fracture itself that the danger is to be apprehended, but from compression of the brain, extravasation of blood, or irritation in some distant part; therefore, when called to a case of fracture of the skull, you do not operate, but consider the symptoms that are present, endeavour to ascertain from what they arise, and then regulate your treatment accordingly; if the symptoms are those of concussion, the treatment must be directed to it; if those of extravasation of blood, and there is not much excitement, it will be necessary to remove a portion of bone; but if

there be fracture only, without any of the symptoms above-mentioned, there will be no occasion to operate.

When a fracture occurs at the base of the skull, it is much more dangerous than at any other part, because extravasation is much more likely to take place, or if not, inflammation of the brain, from the violence of the injury received, very often supervenes. The mode in which these fractures are produced, is by falling from a great height on the summit of the head: when all the weight of the body rests on the foramen magnum, and cuneiform process of the os occipitis, great injury is in this way done; as in very many cases a transverse fracture through the foramen magnum, cuneiform process, and part of the temporal bone is the consequence; a discharge of blood into each meatus auditorius takes place, and where there is no other mischief, deafness often remains for life. A curious fracture within the orbit sometimes occurs, as in the case from which this specimen (pointing to one on the table) was taken, when destruction of life was the consequence of the injury received. I will give you the history of the case:—A child was playing with a scissors, when the point of it entered the upper part of the orbit, between the ball of the eye and the superior eye-lid; the scissors was with difficulty extracted; the child's eye did not become inflamed; after the accident the child walked from Walworth, to Mr. W., of Hatton Garden, who attended it; on the 10th day from the time of the mischief, symptoms of compression of the brain came on, rigors, inflammation of the brain supervened, and the child died; on examining the body after death, it was found that the scissors had penetrated through the orbitar process of the os frontis, and lacerated the dura mater; a considerable quantity of extravasated blood was found, and the anterior lobe of the cerebrum was punctured by the point of the scissors, from which it had received the injury.

It now and then happens that a blow received upon the summit of the head will produce a circular fracture of the entire cranium, commencing at the top of the head, passing down on each side through the temporal bone, and meeting at the basis.—Mr. Chandler, late surgeon of the hospital, had a case of this description; there did not appear to be any extravasation or concussion; great irritation and violent inflammation succeeded, which destroyed the patient; and after death, it was discovered that there existed a complete circular fracture of the skull, and that the anterior portion could be freely separated from the posterior. I believe these cases always terminate fatally.

There is a curious fracture of the skull which occasionally takes place over the frontal sinuses. When the fracture is simple, if the nose be blown, the air escapes through the opening in the bone, and getting into

the cellular membrane under the skin, renders the forehead emphysematous. If, on the other hand, the fracture is compound, upon blowing the nose, the air rushes through the wound; so that, in either case, the nature of the accident may be easily ascertained.

Fractures of the skull, if unaccompanied with concussion or compression, as readily unite as fractures of the bones in any part of the body. Here is a curious case (exhibiting a skull) where a circular, or rather oblong, piece of bone was, as you may perceive, completely separated from this part of the os parietale by the cut of a sabre; and yet, from what you here see, it is evident that it became re-united. However, I will send it round, that you may have an opportunity of examining it yourselves. Fractures of the cranium, therefore, easily unite. Where, however, large holes are made through the skull, the apertures do not again become filled by ossific matter, but by a tendinous structure formed from the bone and dura mater. The holes made in trephining are supplied in this manner, and not by bone. Also, when in fractures of the skull, where the bones are separated to any distance, the interspace will not become filled by bony matter, but remain open as you here see it (showing a skull which had been fractured, and the broken part widely separated.)

Treatment of Fractures of the Skull.—When there is simple fracture, unaccompanied with symptoms of injured brain, you must not trephine, neither in compound fracture; but you must, by the application of adhesive plaster, endeavour to heal the wound in the scalp as quickly as possible. Let your constitutional treatment be that of depletion, by means of blood-letting and purgatives. This plan often removes symptoms of concussion, and even extravasation, which accompany these fractures; and often a few hours will show you that the application of the trephine, which you at first might have thought indispensable, is wholly unnecessary. It is wrong, therefore, to be too much in a hurry in these accidents; for irreparable mischief might arise from your converting a fracture, which was simple, into one that is compound. Wait, then, gentlemen, for a while, before you operate in such cases, for the purpose of seeing what effects may be produced by bleeding and purgatives. It not unfrequently happens in these hospitals, upon persons being brought in who have received injuries of the head, that the dresser in attendance will bleed them immediately after their admission, and at the same time send off for the surgeon; before whose arrival, however, the good effects of loss of blood are apparent, and the symptoms of concussion, and even of extravasation, have often disappeared. This shows how necessary it is that you should not be too precipitate. If you act prudently, therefore, in these accidents, you will

try bleeding and purgatives before you operate; and whether you do or not, the depletion will prove of the greatest possible advantage in preventing inflammation, and from which, if not kept within bounds, arises the principal danger.

The next subject to which I shall direct your attention is

FRACTURE OF THE SKULL WITH DEPRESSION.

I will tell you what you ought to do in such cases, and then leave you to act for yourselves. In order to ascertain whether the symptoms arising from depression would come on immediately after the accident, I tried the following experiment:—A gentleman having brought me a large dog, I applied the trephine to his cranium, and took out a portion of the bone. I then, with the handle of a knife, separated the dura mater from the bone; for I found that I could make no impression on the brain until I had done so, and then pressed upon it with my finger. At first the animal did not seem to feel it; but upon pressing more deeply, it produced pain and irritation, and he endeavoured to avoid us. Upon still increasing the pressure, he became comatose, and fell. I kept him in that state for five or six minutes, when, upon removing my finger, he got up, turned round two or three times from giddiness, and walked away, apparently little worse for the operation. A gentleman, who felt the animal's pulse during the continuance of the experiment, stated, that it became slower as the pressure became increased. In man it is the same—slow and labouring.

After blows have been received on the head, it often happens that upon making an examination of the scalp, there appears to be depression of bone to a great extent, when, in reality, there is none. Let me put you on your guard here. A person receives a blow on the scalp: the parts immediately surrounding the spot where the blow was received will rise, from the extravasation of blood, two or three lines higher than the part itself; for there the cellular membrane having been condensed by the injury, will likewise tend to increase the deception: thus the surrounding parts are considerably higher than the middle; and the external character of the contusion is certainly calculated to deceive those who are unacquainted with the nature of these accidents. I have several times seen these affections; but the first case which I recollect was that of a child brought into Guy's, who had received a severe blow on the head from a brickbat, which had been thrown at it by a man. All present were prepared for the operation, fully expecting that I should apply the trephine; for they felt convinced that there was considerable depression of bone; and when I stated I should not operate, they exclaimed, "Good God! I wonder what can be his reason." This child,

after having been freely bled and purged, in two or three days quite recovered.

I have often been sent for by my dressers to these cases, and have been requested to bring my instruments with me; but upon examination have found that there was no depression of bone, and that the uneven appearance of the scalp was produced by the causes before mentioned.

It also very often happens in fractures of the cranium that considerable depression of bone will take place from the external table of the skull being driven into the diploe, and without producing the slightest injury to the internal table; do not, therefore, be precipitate in your diagnosis, nor hastily determine upon performing an operation, which you might afterwards have reason to repent: these fractures, however, can only occur in those of a middle age, for in the very young and in very old age, the skull is thin and without diploe. I believe in the course of my practice, that I have frequently met with this accident, and we have many preparations in the museum which clearly demonstrate their true character; but the three now before me (pointing to three skulls) are, I think, quite sufficient to satisfy your minds as to the nature of this accident; here you see the external table has been driven in, and yet no vestige of fracture in the internal; here is another specimen, with greater depression; and the third still more than either, yet the internal plate is sound. I am not acquainted with the histories of these specimens, but it is evident that the persons recovered by the re-union that has occurred between the parts which were broken.

Suppose you are called to a patient who has had a severe blow on the head, and that, on examining the skull, you find a portion of bone considerably depressed. You may still find this man capable of giving a history of the accident, and that his mind is not at all affected. On the other hand, you may be called to a person who has a fracture of the skull with depression, and who has lost the powers of mind. In such a case, if the fracture is simple, and there is no wound in the scalp, and no symptom of injury to the brain, it would be the worst practice in the world to make an incision into the part, and perform the operation of trephining; for, by making such an incision, you add greatly to the danger of the patient, as you make what was before a simple, a compound fracture, and consequently greatly increase the danger of inflammation. Inflammation rarely follows fracture with depression, where the fracture is simple, but very often follows a compound fracture, which is produced by making an incision in the scalp. Never make an incision, therefore, when you can avoid it, or merely because there is fracture with depression, if there be no symptom of injury to the brain. Even if there be symptoms of injury to the brain, and the fracture be

simple, do not immediately trepan. Take away blood, and purge your patient freely, and see how far the symptoms may be the result of concussion of the brain, and not of depression. If the symptoms do not yield to depletion, then, and not till then, perform the operation of trephining. I was called to a lady who had fallen against a projection of a wall in walking across her parlour. The os frontis was driven in, but there was no symptoms of compression of the brain. I bled her, and guarded cautiously against inflammation, but there was no necessity for elevating a portion of the bone. This lady never had any symptoms of injury to the brain, and she recovered by depletion alone.

The old practice used to be, the moment an injury to the brain was suspected, and the least depression of the bone appeared, to make an incision into the scalp. I have heard of a dresser in these hospitals, who, having had no accident during his week, said, "I will make a cut in the head of one of my patients with fracture, for he may perhaps have depression, and I shall in this way have something to do before my week is up." This dresser ought to have a cut made in his own head; he should have been cut for the simples. (*A laugh.*) This was putting his patient to considerable hazard; for the simple fracture would, by the incision, be rendered a compound fracture. In simple fracture, then, when it is attended with symptoms of injury to the brain, deplete before you trephine; and when it is unattended with such symptoms, though there may be depression, deplete merely, and never divide the scalp.

If the fracture be compound, the treatment must be very different, because a compound fracture is followed very generally by inflammation of the brain, and it will be of no use to trephine, when inflammation is once formed. It might be thought that it would be time enough to perform this operation when inflammation had appeared; but this is not the case, for if inflammation comes on, the patient will die whether you trephine or not, and you will be so far from arresting its fatal progress by trephining, that the operation will add to the danger of the inflammation. When inflammation of the dura mater and membranes of the brain has been excited by the depression of the bone, you cannot retard the progress to death by performing the operation. These principles may be illustrated by many cases. During the first year of my apprenticeship in these hospitals, I saw two instances: one, in a patient of Mr. Cline's, and another in a patient of Mr. Birch's. Mr. Cline's patient was a man who came from Walworth, with compound fracture, from a blow on the head. A portion of bone had been forced into the cavity in the skull. Mr. Cline advised him to submit to the operation of trephining. The man said, "You may do what you like; I am no

judge, but you are, so do what you please with me." Accordingly, he walked into the operating theatre to be trephined; the portion of bone was removed; he walked back again to bed, and never had a bad symtom. A short time after, a patient under Mr. Birch, with fracture and depression, was told that he was in similar danger, and advised to undergo the same operation. He was, however, self-willed, and obstinately refused to submit to it. Eleven days after the accident, he was seized with pain in the head, and symptoms of inflammation in the brain, and when he became insensible, the operation of trephining was performed: but it did not arrest the symptoms, and he died of the inflammation. In the other hospital two boys were admitted under very similar circumstances. The os frontis had, in one case, been broken by a kick from a horse, and in the other by a fall on the forehead. In the former case the portion of bone was raised, and the boy did well; but the mother of the other boy interfered to prevent the operation of trephining; and though it was performed after symptoms of inflammation had appeared, he died. It is quite true that it often happens that fracture with depression is frequently not followed by inflammation, even when the fracture is compound; but we cannot be certain of this, and if it does ensue, we cannot save the patient by trephining at a late period. The rule, therefore, which I always follow, is this:—When I am called to a fracture, with depression, which is exposed to view, I generally use an elevator, and very rarely the trephine. I put this instrument under the bone, raise it up, and if it has been comminuted, remove the small portions of bone. If, however, one bone is wedged within the other, I apply the trephine for raising the depressed portion of bone. The elevation of the bone is never followed by any mischief; but if you do not raise it, and inflammation follows, it will be too late to attempt to save the life of the patient.

I shall conclude, gentlemen, by mentioning two other circumstances; but they are two circumstances to which, if there be any thing valuable in the lecture, I wish most particularly to call your attention.

The first is this: it sometimes happens, in fracture of the skull attended with depression, that a small spicular portion of bone will project into the brain, so as to produce and support epileptic symptoms. A negro, who was a patient of Mr. Birch, had fracture from a blow on the head, and a portion of bone was depressed. Shortly after, he was seized with epileptic fits, which continued for many years. When he was admitted into the hospital, it was found that there was still a portion of the depressed bone remaining, and the trephine was applied to it. When the circular piece of bone was completely sawed round by the trephine, so that it could be moved from side to side, Mr. Birch found a difficulty

in raising it; he put the elevator under it, but still it adhered to something within. At last he took a pair of forceps, and by using more force, he extracted a little spur or thorn, which had proceeded from the inner side of the skull through the dura mater into the substance of the brain, and was the cause of the epileptic fits. After its removal, he had but one more fit, and completely recovered.

The other circumstance which I shall mention is one, which, whether we regard it in a physiological or surgical point of view, is perhaps, one of the most extraordinary that ever occurred; and, as connected with surgery and physiology, I am surprised it has not made a greater impression on the public mind than it appears to have done. A man was pressed on board one of his Majesty's ships, early in the late revolutionary war. While on board this vessel in the Mediterranean he received a fall from the yard-arm, and when he was picked up, he was found to be insensible. The vessel soon after making Gibraltar, he was deposited in an hospital in that place, where he remained for some months, still insensible: and some time after he was brought from Gibraltar, on board the Dolphin frigate, to a depot for sailors at Deptford. While he was at Deptford, the surgeon under whose care he was, was visited by Mr. Davy, who was then an apprentice at this hospital: the surgeon said to Mr. Davy, "I have a case which I think you would like to see. It is a man who has been insensible for many months; he lies on his back with very few signs of life; he breathes, indeed, has a pulse, and some motion in his fingers; but in all other respects he is apparently deprived of all powers of mind, volition, or sensation." Mr. Davy went to see the case, and, on examining the patient, found that there was a slight depression on one part of the head. Being informed of the accident which had occasioned this depression, he recommended the man to be sent to St. Thomas's Hospital. He was placed under the care of Mr. Cline; and when he was first admitted into this hospital, I saw him lying on his back, breathing without any great difficulty; his pulse regular, his arms extended, and his fingers moving to and fro to the motion of his heart; so that you could count his pulse by this motion of his fingers. If he wanted food, he had the power of moving his lips and tongue; and this action of his mouth was the signal to his attendants for supplying this want.

Mr. Cline, on examining his head, found an obvious depression; and thirteen months and a few days after the accident, he was carried into the operating theatre, and there trephined. The depressed portion of bone was elevated from the skull. While he was lying on the table, the motion of his fingers went on during the operation, but no sooner was the portion of bone raised than it ceased. The operation was per-

formed at one o'clock in the afternoon; and at four o'clock, as I was walking through the wards, I went up to the man's bed-side, and was surprised to see him sitting up in his bed. He had raised himself on his pillow. I asked him if he felt any pain, and he immediately put his hand to his head. This showed that volition and sensation were returning. In four days from that time the man was able to get out of bed, and began to converse; and in a few days more he was able to tell us where he came from. He recollected the circumstance of his having been pressed, and carried down to Plymouth or Falmouth; but from that moment up to the time when the operation was performed (that is, for a period of thirteen months and some days) his mind remained in a state of perfect oblivion. He had drunk, as it were, the cup of Lethe; he had suffered a complete death, as far as regarded his mental and almost all his bodily powers; but by removing a small portion of the bone with the saw, he was at once restored to all the functions of his mind, and almost all the powers of his body.

It appears, therefore, that in cases of depression we should not be prevented from trephining, however distant the period may be at which the accident occurred; and the patient may, after any interval, be restored to the powers of body and mind.

LECTURE XVIII.

ON WOUNDS OF THE BRAIN.

Wounds of the brain will often happen, without producing any interruption to the operations of either body or mind. But should the wound be accompanied by either compression or concussion, then the particular symptoms which characterize those injuries will be present. If, however, the wound be a simple incision or laceration, it will often prove quite harmless. Indeed, it frequently occurs that considerable portions of the brain are lost, and yet the mental and bodily functions continue unimpaired. Epileptic fits and hemiplegia certainly sometimes follow as effects of such injuries; but on the other hand, brain to a great extent has been lost without having been succeeded by disturbance of either the mental or bodily functions; numerous cases of this description are upon record; several have fallen under my own observation. A case similar to the following likewise came under the notice of a surgeon at Brighton. A dresser of the late Mr. Chandler once came to me when I was in the other hospital, and said "Look here, Sir," at the same time showing me a portion of brain, with a piece of the pia mater attached to it. I went to see this man, and found the representa-

tion of the dresser correct; there was a large transverse opening in the os frontis, through which a considerable quantity of brain had been lost. His mind was not at all affected; neither were the bodily powers in the least disturbed; no bad symptoms of any kind followed the injury; the wound healed most favourably, and he was soon discharged. About a year afterwards, while I was at the house of a lady in the city, whom I was attending, a man walked into the room, and said to me, "How do you do?" Not recollecting him, I looked at him with some sort of surprise, as you may suppose, when he informed me that he was the man whom I had seen about a year before in St. Thomas's Hospital, with a wound in the head, and through which he had lost some of his brain. I replied that I could readily believe him. He stated that he had been quite well ever since—he had what he called an opening where he received the wound; was not subject to fits; and to show you that his mind (notwithstanding his familiar "how do you do?") had not sustained any damage from the accident, he was, at the time I saw him, conductor of an extensive business at the house where he was then living.

It occasionally happens, when a portion of brain has been lost, that a piece of the cranium will, by being driven in, occupy its place; and if, in these cases, no symptoms of compression manifest themselves, you must not elevate the depressed bone: for were you to do so, you would, in all probability, give rise to extravasation, or increase the hazard of inflammation. The late Mr. Chandler had a patient in this hospital, who, on receiving a blow from a boat-hook upon the parietal bone, had a portion of that bone driven into the brain, and at the same time a quantity of the brain was lost: at first there was hemiplegia; this effect, however, soon disappeared. The depressed bone was permitted to remain, and the individual perfectly recovered. Such cases are not uncommon, and I could relate a number of them to you.

The danger attending injuries of the brain arises principally from two causes: viz. inflammation, and the formation of fungus. 1st. Inflammation, and 2nd, fungus; but I am happy to tell you, that both of these may be conquered by scientific and prompt treatment. When the brain receives a wound, you must commence your curative exertions by abstracting as large a quantity of blood from the system as the constitution of your patient will bear; not, however, to such an extent as to prevent the restorative operations of nature. Do not lower the system to such a degree as to prevent inflammation altogether, as was done by the dresser in the other hospital, whose partiality for bleeding I mentioned to you a few evenings since. Though you succeed in keeping down inflammation, fungus will spring up; and here (exhibiting a pre-

paration) you have an opportunity of seeing an example of the disease to which I allude. Sometimes wounds of the brain extends even to the ventricles, and here (showing another preparation) you observe that one of the lateral ventricles was laid open.

Now, gentlemen, some days after the brain has been wounded, the divided parts begin to unite by means of the adhesive inflammation ; if this process cannot effect a cure, granulations form, which at length project through the opening in the skull, and give rise to the fungus before mentioned. Upon proper treatment the safety of your patient depends. If you do not repress the growth of the fungus, there will be violent constitutional irritation, and the life of the person in jeopardy ; but, on the contrary, if you attend to the condition of the wound, and prevent the fungus from rising, there will be, comparatively speaking, but little danger.

Well, gentlemen, the treatment is as follows:—You are to apply to the fungus a piece of lint, wetted with liquor calcis, and over this, strapping of adhesive plaster; when you examine the part on the following day, you will find the fungus considerably diminished ; you are then to use a thicker piece of lint, and the strapping as before; pursuing this plan, you at length get the fungus to the level of the scalp; but this is not sufficiently low for your purpose, therefore you must still thicken the lint until you have succeeded in getting it even with the edges of the dura mater, in which position it must be cautiously preserved ; when, at last the dura mater heals over it, and your object is accomplished. We witness many examples of such cases in these hospitals. Formerly it was the practice in the treatment of these diseases to remove the bone contiguous to the fungus: immense quantities of bone in this manner were taken away, thereby affording every facility to the growth of the fungus, and which, of course, rapidly increased, until the patient was destroyed. By such treatment as this, no person could possibly recover; the method was a most injurious and stupid one: therefore let me caution you against adopting it. The plan of treatment which I have just recommended to you, is unquestionably, the best: viz. that of repressing the growth of the fungus until the dura mater heals over it.

INFLAMMATION FOLLOWING WOUNDS OF THE BRAIN.

I shall now speak more particularly of the inflammation which follows wounds of the brain, wherein their chief danger consists ; which danger is much increased, if the dura mater be the part attacked. Upon the first approach of inflammation, the person complains of a great pain in the head ; very quickly falls into a comatose state ; and when roused from this condition, the pain is excessive ; the scalp, round the external

wound, becomes œdematous, for if you press upon it, the impression of the finger is retained; the edges of the wound have a shining glossy appearance, and from the wound itself is discharged a fluid, composed of blood and serum; sometimes the parts about the wound have a sloughy appearance; the countenance is very much flushed, and the carotid arteries beat with very great force; so much so, that if his shirt-collar be open, you can see the pulsation of the carotids, at some distance from the bed; this circumstance, of itself, would be quite sufficient to convince you that there was a great determination of blood to the brain. The next thing which you observe is, that the patient is seized with rigors, and these follow in very quick succession; hemiplegia likewise often attends, and is generally situated on that side of the body opposite to the wound; the patient remains in a comatose state, but when roused, will give you (until towards the very last) rational answers to such questions as may be put to him. These, then, are the ordinary symptoms of inflammation of the brain, arising from wounds of that organ.

If the inflammation should terminate in suppuration, I have already shown you in a former lecture where the matter would be situated, viz. between the dura mater and skull (this rarely happens), pia mater and tunica arachnoides, pia mater and surface of the brain, and, lastly, in the substance of the brain itself. When pus is situated between the dura mater and skull, trephining for its removal would be attended with complete success; but the chances of finding it there are against you, as it is generally situated between the pia mater and surface of the brain, for which an operation would prove worse than useless. Another situation in the head where matter has been found is, in the longitudinal sinus of the dura mater. This woman (holding up a preparation), seventeen months before she died, fell down stairs, and her head went in violent contact against a chest, by which she became stunned: for some time after the fall, matter was discharged from one of her ears; this at length ceased, and, to all appearance, she was entirely well. The pain, however, again returned with evident symptoms of compression; and sixteen months after the accident she was admitted into this hospital. After some remedies had been fruitlessly tried, and she had been here for a short time, it was thought advisable to try the trephine; the operation was unsuccessful, and four days afterwards she died. Upon examination, it was found that there was a small quantity of pus embedded in the longitudinal sinus, as you here see it (exhibiting the preparation). This is the only example of the kind which I have witnessed.

The next part in which matter is situated is between the tunica arachnoides and pia mater, or between the pia mater and brain itself. This last is of most common occurrence, and in this case the matter is

diffused over the hemispheres of the brain, in the same manner, as I mentioned to you the other evening, that blood is when extravasated on that organ. When the matter is between the pia mater and brain, it will be of no use to operate, as very little will be discharged, there being no communication between one part and another; for the matter is contained within distinct cells, between the vessels which come from the pia mater to the brain. The next situation in which matter is found is in the substance of the brain itself. Here are specimens (pointing to some on the table), in one of which matter was lodged in the anterior lobe of the cerebrum, the other in the cerebellum; in fact, it is lodged in various parts, and the only circumstance very curious in this complaint is, that you would not suppose, from the symptoms, that matter was forming; they are those of compression rather than irritation. If the membranes of the brain be attacked with violent inflammation, symptoms of irritation will be present; but if the brain itself, they will be those of compression; and the circumstance which surprises a person who examines the brain of an individual in which matter has been formed is, that so little constitutional irritation existed during its formation: it is inflammation of the membranes, and not of the brain itself, in which great irritation is present. Here is a curious specimen (pointing to one before him), taken from a child that I had under my care, and on whom I performed the operation of trephining; I will give you the history of the case: A young child was playing in a yard where there were some fowls, when it received a wound on the head from the beak of a cock. The mother hearing the child shriek, ran to the spot, and found that there was a small wound of the scalp, and thinking that there was no injury to the brain, she bound it up; but a week afterwards pain in the head came on, together with great constitutional irritation, and the child was brought to me. On examining the head, I found that a circular incision had been made in the bone, and that matter issued through the opening. I said to the mother, If the child is not better by to-morrow, bring it to me again, and I will allow a more free opening for the matter to discharge itself. The next day the child was brought to my house, and I performed the operation of trephining, when I found there was an opening in the dura mater and pia mater, corresponding to that of the bone; the symptoms of irritation were relieved by the operation, those of compression, however, came on, and in three days from the time it was performed, the child died. On examining the part after death, I found that there was a circular incision in the dura mater, the edges of which were hardened and thickened, as you see here (pointing to the very part), a similar state of the pia mater and brain, in size corresponding to the external opening,

and an abscess between the pia mater and brain. At that time I had no idea that a wound of the description I have just mentioned could be produced by a bird of this size; but, since that period, I have seen an instance of a similar kind: a pheasant, not an English, but an Indian one, made a dart towards the eye of a person, and, instead of striking it, wounded the os malæ; the bird, by means of its beak, struck a hole into the superior maxillary bone, just below the zygomatic arch.

The time at which inflammation of the brain supervenes after the injury received, is generally about a week: rarely under that time; and this it was that led me to say, on another occasion, that inflammation of the brain was more slow in its occurrence than that of any other organ, in order to put you on your guard. It often happens that inflammation of the brain does not come on till a fortnight, or even three weeks, after the injury: therefore, every surgeon who has written on the subject puts you on your guard as to the distance of time this complaint comes on after the accident: he tells you that the patient is not safe till two or three weeks afterwards. If you read the works of Mr. Pott on the injuries of the head, you will find the circumstance mentioned; and in the works of Mr. Dease, of Dublin (who has published an excellent treatise on the subject), it is distinctly stated, that inflammation of the brain is occasionally postponed to three or four weeks after the accident occurs, and even then, the patient is not always safe. I will give you a case relating to this subject: Dr. Babington and myself were sent for to see a person, a clerk to the firm of Whitbread and Company, who, whilst riding on horseback, struck his head against the branch of a tree; he being a short-sighted man, and riding very fast at the time, struck himself violently against the bough of a tree which was overhanging the road, and was brought to the ground by the force of the blow. He was taken to Croydon, where Dr. Babington and myself visited him. We found that he had been struck on the os frontis, just above the frontal sinuses, where there was a depression; and this was the first case in which I witnessed emphysema of the forehead produced by blowing the nose. We took all possible care of the case, bled him, regulated his diet, &c., till the inflammation had subsided. He came to town three weeks after the accident, when he asked whether he might go to Rochester, to spend a little time with some friends, who were anxious for him to come. We told him that he might, if he would pay attention to himself, keep his bowels open, and regulate his diet. After the lapse of a week he became extremely ill, inflammation of the brain came on, and he died. On inquiry, we found that he had neglected the directions given him, and allowed his bowels to get costive. It is always a very serious case when there is a depression on the forehead after an

accident, and I will mention to you an instance of this kind, which will show you the necessity of enjoining on a patient with this injury strict attention to his mode of living. A man who had received a wound in the forehead from a pistol-shot, came to this hospital: the wound healed kindly, but the depression remained. Whenever this man indulged in the use of spirituous liquors, he used to come back with violent pain in the head, which was always relieved by blood-letting.

As to the treatment of inflammation of the brain, it is the same as for inflammation generally, with this exception only, that blood should be drawn from the temporal artery in adults, and the jugular vein in children. Whenever inflammation of the brain attacks a grown person, take blood from the temporal artery; and when young individuals, from the jugular vein; by these means you abstract blood more readily from the part. Even in adults you may, after opening the temporal artery, if the symptoms be not relieved, bleed from the jugular vein. In addition to this treatment, you purge, produce perspiration, and apply blisters to the head. I have seen poultices, containing some stimulating application, of considerable use. It will now and then happen that trephining will be required; and I will tell you the cases in which it will.

1. Where there is extravasation of blood between the dura mater and skull.

2. In single fractures, with depression and symptoms of compression continuing after depletion.

3. In compound fractures, with depression, unaccompanied with symptoms of compression.

4. It is required sometimes that an opening should be made in the cranium, when there is matter between the dura mater and skull.

Now it generally happens in these last cases, where there is matter between the dura mater and skull, that there is fracture, and this is an indication that some injury has been done to the brain, when it is also followed by rigors and other symptoms; still it will be right, in some cases where there is no fracture, and the other symptoms, rigors, &c., are present, to penetrate the bone, to see whether matter be lodged between it and the dura mater; and this is the only case in which it is proper.

ON THE OPERATION OF TREPHINING.

The operation of trephining used to be one of the most complicated kind, requiring several instruments, the learning of which was in itself quite a study; it is now quite simple, and few instruments only are wanted, which can very easily be put into a small case. Let us go over

the instruments formerly used in this operation: but really, gentlemen, they were so numerous, I don't know whether I can count them. They used then a scalpel, rougee, pin, perforator, crown, brush, elevator, lenticular, and a pair of forceps; now you may see (holding a case in his hand), these three instruments will be quite sufficient; a knife, with a double edge, in order to scrape off the pericranium, an elevator, and a trephine having a crown, and a pin which will allow of being easily moved. Now, gentlemen, I will tell you in what parts the trephine should not be applied. First, you should never trephine in the line that extends from just above the nose along the top of the head to the tuberosity of the occiput; over the frontal sinuses it is obviously improper; and at the summit of the head you will meet the sagittal suture, where the dural mater adheres with extraordinary firmness, and the longitudinal sinus might also be wounded; and at the posterior part you have the superior portion of the perpendicular spine of the os occipitis; therefore, in this line you ought not to trephine. I should mention this particularly to young persons, who very often disregard this rule, thinking they know much better than those who have preceded them; if, however, they trephine in this part, the more fools they, and I will tell you why: they are running, in operating in this part, an unnecessary risk, by cutting on a long hole covered over by a smooth membrane, when they might do it as well on either side. It would be the folly of presumption to trephine on this line. There are two other parts in which the operation of trephining should not be performed: first, over the anterior inferior angle of the parietal bone, just above the zygoma; secondly, behind the ears, on the posterior inferior angle of the same bone; and why, no doubt, most of you by this time know; opposite to the anterior inferior angle of the parietal bone is the great artery of the dura mater, and opposite to the posterior inferior angle is the great lateral sinus. Fractured portions of these bones may be raised by the elevator: and I may observe here, that this is the instrument chiefly used in cases where the fractures are running in the direction of these parts. Mr. Hey's saw is a very useful invention. It is gratifying to state that we are seldom now called on to perform this operation. Suppose, however, you were called to a case requiring it, where there was a wound, together with depression of the parietal bone, you would put your finger into the wound, and if the portion of bone depressed were small, you would make a simple incision, and turn the integuments aside, so as to reach the bone. If by this incision you found depression with fracture, you enlarge it in the course of the fracture: if the depression were large, you would make a crucial incision, and turn aside the portion of integument, so as to open a space for the application of the trephine:

then, with the back edge of the knife (which should be made a little stronger than usual), you cut through the pericranium, and scrape it off. For this purpose the rougee was formerly employed. [There was a subject on the table, on which Sir Astley performed the operation as he went on describing it.] Now I put the pin on the skull, and the crown being adjusted, I fix it, and begin the circle. Well, gentlemen, having made a circle, I remove the pin: in young persons it will be necessary to do this soon, because the bone is readily sawn through. I never myself saw a case in which the pin entered the brain; but my nephew was present when the operation of trephining was performed, and the *pin was forgotten*, so that it entered the brain, and inflammation of the dura mater came on. I can conceive that a man in his first operation, anxious how he shall succeed, might forget it. When using the saw, let your bearing on it be as even as possible, else you will be through one part of the skull before another. There is but one danger in performing the operation of trephining, and that is, wounding the dura mater. When trephining on living subjects, you are informed of the progress you are making by blood issuing from the wound when you reach the diploe: and when you see the blood, you will know that you are half through: but, recollect, in very young and old persons, there is no diploe; therefore, very few turns of the saw will do. As you proceed with the sawing, you must introduce your probe, to see how nearly you are through: you sound as you go on. When I find that I have sawn through in one part, I introduce the elevator, and lift the portion of bone, the parts not cut through being easily broken. I find by my probe that in the part near the sagittal suture I have sawn through; I introduce the elevator, feel the bone move, and know that a very few turns will do, taking care not to lean on the side through which I have already sawn. The bone can be raised and loosened; I am quite certain that the dura mater is not injured, and by introducing the elevator, the bone may be removed from its place. [Here the operation was completed.] Some people say that this is a trifling operation, not difficult to perform, nor dangerous; but they deceive you: it is one of the most dangerous operations in surgery; whilst performing it there is but a single step, a small net-work, between your patient and eternity; saw through this, and destruction of life will generally be the consequence. Mr. Hunter made an assertion, that when the dura mater was wounded, the person never recovered; which, though not exactly borne out by the cases which have occurred since, shows the impression made on the mind of a man who was such an observer of nature. Before his death, Mr. Hunter saw a case of a wound of the dura mater recover. It is certain that there is less danger when the dura

mater and pia mater are both injured; the danger is more when the dura mater is injured without the pia mater. I will give you the reason: in the former case, where both the dura mater and pia mater are wounded, a fungus immediately projects, and fills up the cavity. If, however, there is only a small opening in the dura mater, and I were to put some quicksilver into it, where would it go?—into the lower part of the spine between the tunica arachnoides and dura matral covering; inflammation of the dura mater would spread over the whole cavity of the canal, as erysipelas does over the surface of the body; whereas, in the first kind of injury, fungus will project through the opening, which would easily close by the process of adhesion that would take place. I have seen many instances where the dura mater and pia mater have been wounded, but few where the dura mater only has been.

After trephining, the elevator should be introduced to raise the depressed bone, and in this way return it to its natural situation. You see that there is no necessity to operate where there is any risk, because an operation in a part where there is no risk can be as well peformed, the object being only to raise the bone.

LECTURE XIX.

ON WOUNDS OF THE SCALP.

On this subject I have but few observations to make. Wounds of the scalp are not devoid of danger, and I have known several instances in which apparently slight wounds of that part have destroyed life. They are more especially dangerous if accompanied with contusion. If a person receives a blow from an instrument capable of lacerating the part, and considerable inflammation follows, the wound will sometimes destroy life. There are two ways in which wounds on the scalp occasionally prove destructive of life; first, by producing erysipelas, and, secondly, by producing inflammation of the tendon of the occipito-frontalis.

A man came to the other hospital a short time ago with a wound of the head from a blow which a companion had given him. The dresser thought it too slight a case for admission into the hospital; but a few days after the man returned with violent pain in the head, a considerable swelling of the scalp, and erysipelatous inflammation extending over the whole face and neck. He was admitted into the hospital for the erysipelatous inflammation, of which he afterwards died. Upon examining the body, there was found an effusion on the membranes of

the brain between the tunica arachnoides and the pia mater. The other way in which wounds of the scalp destroy life, is by producing inflammation of the tendon occipito-frontalis, which extends over the whole surface of the head. This inflammation covers the scalp and face, and assumes an erysipelatous character, but it is not true erysipelas. It has not the vesicles or blisters filled with serum, which commonly attend erysipelas, but it has a tendency rather to suppuration; and if the constitution has strength to produce this suppuration, it takes place between the tendon and the pericranium. In this way a very extensive abscess is often formed, into which we are obliged to make an incision, in order to discharge the matter, which cannot make its way through the tendon. Extensive disease is thus produced, and the inflammation attending it sometimes destroys life. I have already alluded to a case that occurred recently, in which a person died of erysipelas, which followed the removal of an encysted tumour. The tumour had been removed twice before, and to prevent its recurrence, an incision was made so deep as to lay bare the pericranium, and in this operation the tendon had been cut through. There is a great deal of danger in inflammation arising from this cause, and it is on that account that I was anxious to point out to you, in a former lecture, the impropriety of making incisions in the scalp merely for the sake of exploring the nature of the injury. An incision in the scalp is often attended with considerable hazard, and should never be made unless imperious necessity demands it.

ON INJURIES OF THE SPINE.

Injuries of the spine produce effects similar to those arising from injuries of the head; the spine being liable to concussion, extravasation, and fracture with depression.

Cases of concussion of the spine are not very unfrequent. They occur more commonly in the lumbar region than in other parts of the spinal column. A violent blow on the loins produces paralysis of the lower extremities. The paralysis, however, is not complete; the person is unable to support his body, but generally some power of moving his limbs remains. This paralytic state, arising from a blow on the loins, is in general easily removed in the following manner:—You apply cupping-glasses to the part, and take away blood from it several times with the scarificator. If, at the end of a week or ten days, the paralytic state still continues, you must apply a blister to the loins, and keep it dressed with equal parts of the unguentum lyttæ, and unguentum sabinæ. The lytta being in this way absorbed into the constitution, diminishes the disposition to paralysis, while the counter-

irritation also produces good effects. Such is the plan of treatment to be pursued in cases of concussion of the spine. With respect to extravasation on the spine, the examples are but few in which this has occurred. The cases which are more particularly impressed upon my mind are, first, one which was examined in this hospital by Mr. Henry Cline. A person received a severe blow near the cauda equina, by the last dorsal vertebra. He had paralysis of the lower extremities, and shortly after died.

The second case was one under Mr. Heaviside, in which I and Dr. Baillie were also consulted. A young gentleman was swinging with a party of boys, when one of his companions pushed him, that he might rise as high as possible, while two others ran in the opposite direction, and caught him in the neck with a rope, as he descended. He was thrown out of the swing, and when he was taken up, was found to be paralytic in the lower extremities. He soon became paralytic in his upper extremities also, and a few weeks afterwards he was brought to town in this state. It was suspected that there was some disease of the spine, produced by the injury the neck received, when the rope suddenly caught it, but no deformity could be discovered. An issue in the neck was advised, with a view of producing counter-irritation; but before this plan could be carried into effect, the boy died. On examining the body, it was found that one of the vertebral arteries had burst, and that extensive extravasation had taken place from the foramen magnum to the sixth cervical vertebra. The whole sheath of the spinal marrow was covered with blood. Mr. Heaviside has a beautiful preparation made from this subject. These cases, probably, admit of no remedy where the extravasation is considerable. I do not know what can be done, except to bleed in the first instance, in order to prevent further extravasation; and afterwards to promote absorption, and excite counter-irritation by the application of blisters. I mention these cases to you as worth knowing, that you may make your own observations on them when they occur, rather than as cases about the treatment of which much is understood in the present state of our knowledge. They are of too rare occurrence to enable us to lay down any positive principles as to the mode in which they are to be treated.

ON FRACTURES OF THE VERTEBRÆ.

Fractures with displacement of the spine are by no means unfrequent; they have been improperly called dislocations; but dislocations of the spine are extremely rare, and only occur in the cervical vertebræ. What are called dislocations are, in fact, fractures with displacement. It is not that one vertebra is separated from another, for this very rarely

happens, and only in the cervical; but that the vertebra is broken through. When fracture with displacement of the spine occurs, paralysis takes place in the parts of the body situated below the injury. If it occur in the loins, paralysis of the lower extremities follows; the power of retaining the fæces, and of expelling the urine, is lost. When the injury occurs in the dorsal vertebræ, there is paralysis of the lower extremities; the same loss of power in retaining the fæces and expelling the urine, with this addition, that it is accompanied with considerable inflation of the abdomen. This inflation might lead the surgeon at first to suppose that there was some rupture of the intestines; but after a few hours, when the patient has had free evacuations, this inflated state of the intestines disappears. The inflation is produced by the great secretion of air into the intestines, in consequence of the diminished powers of the part.

When the injury occurs in the lower part of the cervical vertebræ, paralysis takes place in the upper as well as the lower extremities, though not in the same degree. There is a numbness of the upper extremities, but seldom such a degree of paralysis as to deprive the patient of all power, when the injury occurs below the fourth cervical. The time in which the person dies from these injuries varies according to the seat of the accident. If it occur in the loins, the patient will generally die in from five to six weeks; if the displacement be very considerable, he may die in three weeks: on the other hand, when the displacement is slight, the patient may live many weeks, and even months. I have known a person live two years after an injury which was supposed to be a case of fracture, with displacement of the lumbar vertebræ. As there was no examination of the body, after death, in the case to which I allude, some doubt must necessarily exist as to the exact nature of the injury; for morbid anatomy can alone teach you the real nature of disease. When fracture with displacement occurs in the dorsal vertebræ, the patient generally lives a much shorter time; though even in this case I have known a person live nine months. A person of the city, named W., riding on Epsom Downs, at full speed, came to a road which led to a chalk or gravel-pit, and finding that he could not stop his horse, he put spurs to him to endeavour to clear the pit. He succeeded in doing this, but the horse, in consequence of the effort, fell on the opposite side, rolled over him, and broke his dorsal vertebræ. Paralysis of the lower extremities followed, but this gentleman lived four or five months after the injury. When fracture with displacement occurs between the fourth and seventh cervical vertebræ, the patient generally lives from four to five days. I have known a person die as early as forty-eight hours after the injury. If the injury occur between the

second and third, or between the third and fourth cervical vertebræ, the person dies on the instant.

Those who have attended in the dissecting room can readily explain how this happens, and would, perhaps, feel themselves insulted if I were to explain it to them. Those who have dissected less will excuse me for saying that instant death ensues in this case, because the injury occurs above the origin of the phrenic nerve, which is the only agent in supporting respiration after pressure on the spinal marrow has occurred. The function of respiration, after pressure on the spinal marrow, is supported by the diaphragm only, and when the fracture with displacement occurs above the origin of the phrenic nerve, the diaphragm loses its power, and instant dissolution is the result.

But it sometimes happens that the cervical vertebræ are broken without displacement. When this occurs, some curious circumstances take place. At the time I lived with Mr. Cline, the following case occurred:—A girl received a severe blow on the neck, after which it was found, that whenever she attempted to look at any thing above her head, she was under the necessity of putting her hands behind it, and gradually elevating it to the object. When she wanted to look at any thing beneath her head, she put her hands under her chin, and lowered her head to the object. If any other child in play ran against her and shook her body, the concussion produced uneasy sensations, and she would run to a table, or any place on which she could rest her head, and support it with her hands under her chin until the agitation produced by the shock had subsided. The child lived twelve months after the accident. On examining the body after death, Mr. Cline found the atlas broken through; there was a transverse fracture of the atlas, but no displacement. When she endeavoured to raise her head, the dentiform process quitted its natural situation, and carried back a portion of the atlas; when her head inclined forward, pressure was produced upon the spinal marrow, as it was likewise when the body was agitated. This is a curious instance of fracture occurring in the cervical vertebræ without displacement. With respect to the treatment of fracture, with displacement of the spine, nothing has hitherto been effectually done in surgery.

Mr. Henry Cline was the first person who attempted to give relief in this accident. Being an excellent anatomist, and a most able surgeon, he saw no reason why cases of this kind should not be treated as cases of fracture with depression of the skull. Accordingly he cut down upon the arch of the spinal marrow, where the compression was greatest, and, with a small trephine of his own invention, he sawed through the arch of the spinous process, and took off the pressure on the spinal

marrow, by raising the depressed portion of the arch. It is well known, that in cases of fracture where the displacement has been slight union of the bone has been produced. There would be no difficulty in producing this union, supposing the pressure on the spinal marrow to be removed. There is a preparation in Mr. Brookes's collection, from a case of fracture with depression, where the person lived long enough for the fracture to be united; and in the College of Surgeons there is a preparation presented by Mr. Harold, of Cheshunt, from a case where union of the bone took place after fracture with displacement. There is no danger, therefore, as to the restoration of the arch of the bone, if the pressure on the spinal marrow could be removed; and it was with this view that Mr. Cline sawed through the arch. It is right, however, to mention, that in many of these cases the spinal marrow is itself torn through. In some cases of fracture with displacement, it is completely torn; in others partially; and in some not at all. In cases where it has not been torn, there would be hope from such an operation; and it is in these cases that the operation has been performed. Mr. Tyrrell has attempted the operation since Mr. Cline, but both cases have terminated unfavourably. Whether future experiments may be attended with better success it is impossible to say. The proposal was plausible; the operation was easily performed; and as to the result, if the spinal marrow were not torn, there seems no reason why a person should not recover after such an operation. We are obliged, however, to speak doubtingly on this subject, since the first experiments have been unsuccessful. If you could save one life in ten, ay, one in a hundred, by such an operation, it is your duty to attempt it, notwithstanding any objections which some foolish persons may have urged against it. Suppose any one now present were in this state himself; suppose him put to bed with a paralysis of his lower extremities, and fully acquainted with the inevitable result if nothing were done; would he not be glad to have any attempt made to save him? Would it not be foolish and unmanly to say, he would rather die than have such an attempt made? The operation is not severe—it cannot add to his danger; and as to the pain, no man who *is* a man would regard it. In the two cases in which the attempt was made, the operation did not shorten life; on the contrary, there is reason to believe that it prolonged it. You will be justified, therefore, in making the attempt. Though I may not live long enough to see the operation frequently performed, I have no doubt that it will be occasionally performed with success. There is no reason why it should not; and he who says that it ought not to be attempted is a blockhead.

I shall now proceed to describe to you

ANEURISM.

Aneurism is a pulsating tumour containing blood, and communicating with the interior of an artery. There is one exception to this definition, namely, where aneurism, as it sometimes happens, takes place in the heart.

Aneurisms are situated either externally or internally; that is, they are either so situated on the limbs as that access may be had to them, and the nature of the disease clearly ascertained; or they are so placed in cavities of the body, such as the abdomen, chest, and cranium, as to render the nature of the disease very often extremely doubtful. With respect to external aneurisms, the symptoms may be divided into *three* stages. When you have an opportunity of seeing aneurism in its early stage, you will find a small tumour pulsating very strongly—much more strongly than in subsequent stages; for it may be taken as a general rule that the force of the pulsation is in the inverse proportion of the size of the aneurism. When an aneurism is first formed, it contains only fluid blood; and if you apply your finger to the artery between the aneurism and the heart, you will readily empty the aneurismal bag by the pressure. In this state there is scarcely any pain, and no other alteration in the limb than some irregularity of circulation producing spasm in the muscles; and when the patient is going to rest, cramps in the legs, and sudden twitchings, which prevent him from sleeping. The next state in which we find aneurism is, when the blood is beginning to coagulate in the interior of the sac, the coats of which are very considerably thickened. At this time, if you press on the artery, you may empty the sac in part; you will see the swelling reproduced when you take off the pressure. You cannot completely empty the bag by pressure, for a considerable degree of swelling will still remain. There is some degree of pain in the limb below in this stage of the disease, in consequence of the size of the swelling and the pressure on the surrounding parts. The aneurism becomes a solid swelling, instead of a mere bag containing fluid blood, and the circulation is retarded by the pressure on the surrounding parts.

In the next stage the aneurism has acquired considerable magnitude, and the pulsation is in a great degree lost. Pulsation may be observed in some one part opposite to the opening from the artery, but it is seldom perceived over the whole swelling. A small portion of the blood still continues in a fluid state, but the greater part of it is filled with coagulum. In this state, if the aneurism be behind a joint, the motion of that joint becomes impeded. Popliteal aneurism is one of very common occurrence; there is an enlargement behind the knee,

just at the bend of the joint, with a pulsation: the foot and leg of that side are swollen; the swelling gradually increases, and the aneurism becomes of a dark colour; inflammation of the cuticle covering the sac ensues, vesication of the cutis to the size of half-a-crown takes place, and the skin in this part is quite insensible. In a few days an eschar is formed, the bag opens; bleedings, one after another, take place, and the destruction of life is the consequence. What you read in books respecting the mode in which death is produced in these complaints is, that the sac bursts, and the patient is destroyed by the sudden gush of blood; but, I tell you, gentlemen, it is no such thing; it is not from the sudden bursting of the aneurismal bag that the person dies, but by repeated bleedings from the part. At first the bleeding is small, but as the eschar increases, and the separation of the parts takes place, it becomes more; the wound is produced by means of the sloughing process, like a slough in any other part, and an opening is formed which leads into the aneurismal bag. At the commencement the wound is small, and blood issues from the part; lint is applied to the wound, and the hemorrhage is stopped; but as the eschar proceeds, and the size of the wound increases, the hemorrhage returns; and thus, by repeated hemorrhage, destruction of life is produced, and not by any sudden discharge of blood from the sac; it is not in aneurism of the extremities only that death thus takes place, but in aneurisms that occur internally; in the chest, for instance, the same circumstances happen as I have just mentioned. Aneurisms, if not operated on, are not always destructive of life. I have seen grangrene of the foot and leg, as far as the knee, from aneurism, take place, without destroying life. I saw a case where the foot and lower part of the leg became gangrenous in a man labouring under popliteal aneurism; they sloughed off; amputation was performed just above the ankle, and the patient recovered. Destruction of life, then, takes place in aneurism from repeated hemorrhage and gangrene. Gangrene of a small part of the limb in aneurism may occur, and still be remedied by means of surgical aid.

The history of *internal* aneurism is different from that of the external. I will describe it to you in a few words, though the subject is by far too ample to be properly treated of at present. I mentioned to you just now, in the definition that I gave you of aneurism, that there was an exception to it, and that was the heart itself, when the subject of aneurism. Here is an aneurism (pointing to one on the table) of the heart: this and two others are all that I have ever seen; for what are often called aneurisms of the heart are not really so—they are a simple dilatation of the ventricles. An aneurism of the heart consists of a bag formed out of the parietes of that organ, and in this bag an opening is formed, as

in the aneurisms which take place in arteries. In this specimen there is a bag formed of the parietes of the left ventricle, considerably larger than an orange, together with an opening which communicates with it. The other instances which I have seen of aneurism of the heart are the following: A soldier of the guards had committed some offence, for which he was severely flogged; being a determined fellow, he resolved not to cry, and whilst he was receiving the punishment he held his breath; a short time after this he was seized with violent pain in the chest; Mr. Palmer, surgeon to the guards, was sent for, and he found him dying, as he thought, of ascites and œdema of the lower extremities. He soon died, and on examination it was found that there was an aneurism of the left ventricle, which had burst, as the pericardium was very much distended with blood. Mr. P., of Chichester, surgeon to the militia, was sent for, to see a man who had symptoms of diseased heart, and intermitting pulsation; he had also ascites and œdema of the lower extremities. This man died, and there was found an aneurism of the left auricle. A curious circumstance in this case was, that the blood had insinuated itself into the coats of the left auricle; the aneurism was of the size of a walnut; its coats had given way, and nature, as it were, thus unloaded herself. These three cases of aneurism of the heart are the only ones that I have seen.

ANEURISM OF THE AORTA.

Aneurism of the ascending aorta, just at its commencement, where it is covered by the pericardium, is not of uncommon occurrence. Here are two examples of aneurism in that situation (pointing to the specimens on the table) of the size of a walnut; they had burst into the pericardium, which, on examination, was found filled with blood. I will give you a singular case, in order to put you on your guard, as you must expect to meet with thorns as well as flowers in the profession. A man was brought to the other hospital labouring under popliteal aneurism; I told him he must submit to an operation. In order to have the principal artery of the thigh secured, he sat down on the table, and was placed in the usual position; before I had quite reached the sartorius muscle, I saw him stretch himself on his back, and perceived urine coming from the penis. I immediately said, This is more than the expression of pain and the apprehension of danger. He got up, made a gasp; I took out a lancet, opened a vein, but no blood came. I then tried to obtain some from the jugular, but in vain; in three minutes he was quite dead. I said, gentlemen, as you have seen the death, you shall see the examination. He was conveyed to the dead-house; and the next day I opened the chest, and found the pericardium

distended with blood, containing from a pint to a quart; and at the beginning of the aorta, just above the valves, there was an aneurism of the size of a walnut, which had burst. It is well that in this case the ligature was not applied, or the principal vessel divided, else the surgeon would probably have had the credit of killing the patient. I mention this case to put you on your guard, that you should never operate for aneurism till you have ascertained whether there be one situated in any other part; for it frequently happens that aneurisms attack several parts at the same time. This I know, that a man came into this (St. Thomas's) hospital with popliteal aneurism: and the operation was about to be performed, when, on account of a pain in the abdomen, it was postponed. Before the next operating day he had died suddenly, and, on examination, an aneurism was found between the two emulgent arteries. Well, then, before you operate for aneurism, see whether there be pain and pulsation in any other part.

LECTURE XX.

ANEURISM OF THE ASCENDING AORTA.

When an aneurism takes place between the heart and curvature of the aorta, you find, after a time, from the pressure of the aneurismal bag, the cartilages of the ribs become absorbed, as in the specimen before me (pointing to one on the table), where the cartilages of three of the ribs, and a portion of the sternum, have been absorbed; when the aneurism presses on the lungs, dyspnœa comes on, together with cough, and the complaint is obscure, but at last the fulness on the right side, and the pulsation to be felt by the pressure of the hand on the intercostal spaces, will enable you to distinguish this disease; then the ribs become absorbed, the aneurism presses against the pectoral muscle, absorption reaches the skin, and the sac bursts by the inflammation of the skin, the destruction of the life of the part, and the separation of the eschar. I will mention to you a case which shows how life may be prolonged sometimes by the formation of an artificial sac: a female in the other hospital had an aneurism of the ascending aorta; the skin had become inflamed, the eschar was separating, and a small quantity of blood was discharged; a clot of blood plugged up the orifice of the opening; pieces of lint were applied, over which was put some adhesive plaster, and lastly a bandage. She lived twenty-seven days afterwards; the opening of the wound, however, gradually increased, and she died in consequence of inflammation of the interior of the aneurismal bag and aorta.

When, therefore, you are called to a person with an aneurism in this part, and when hemorrhage has come on, you can protract life by coating the wound with lint, and endeavouring to form an artificial sac; and by this means you give your patient two or three days, or weeks, to live, allowing him that time for making any preparation he may wish. These cases are, however, quite hopeless, and I have never known one spontaneously cured.

ANEURISMS OF THE CURVATURE OF THE AORTA.

These aneurisms are very frequent, and are to be seen just above the sternum. You will find that termination of existence takes place in different modes in these aneurisms. In the specimen before me (exhibiting one on the table), death was produced by the bursting of the artery into the trachea; it was given me by Mr. Davis, and was taken from a man, the subject of aneurism of long existence; rising from his bed one day, the artery must have burst into the air tube, cough came on with a sudden gush of blood, and he died, partly from suffocation, and partly from loss of blood. An aneurism of this kind often causes, by its pressure, dyspnœa and suffocation; it also often presses behind on the œsophagus, instead of in front on the sternum; it will be seen in the back, through the ribs, by the edge of the scapula, between its base and the spine. Now, gentlemen, I will tell you one or two practical points here, to put you on your guard, and induce you to take great care in these cases. Mr. Dyson, of the city, called on me one day, and said that he had a patient with aneurism of the neck, which he thought was an aneurism of the carotid, and that he should like me to see it. I immediately went with him, and on examining, midway between the clavicle and lower jaw, there appeared to be a collection of fluid proceeding to behind the sternum. I told Mr. Dyson, that I was very doubtful of its being an aneurism of the carotid. Some time after this, Mr. Dyson sent for me to go with him to examine the body of this person; we found a small pouch, just behind the sternum, proceeding from the curvature of the aorta. It was of very great importance that a ligature had not been applied; the sac would have been cut through, and destruction of life taken place. The late Mr. Burns, of Glasgow, who was an excellent anatomist, and who published a capital work on the anatomy of the head and neck, wrote to me to say that he had a case of aneurism above the clavicle, and entertained some thoughts of tying the subclavian artery for it, and asked me some question relative to it, to which I returned an answer, and said to him, Take care, do not deceive yourself, for what often appear to be aneurisms of the subclavian artery, are really aneurisms of the aorta. The operation

was not performed. (It is mentioned in Mr. Burns' work.) The patient afterwards died, and on examination it was found that it was an aneurism of the aorta; therefore I mention this to put you on your guard, for after what you have lately seen at Guy's Hospital, don't think the operation an easy one, and that it would add greatly to your credit to perform it. You might very easily mistake aneurism of the aorta for aneurism of the carotid or subclavian arteries.

ANEURISM OF THE ARTERIA INNOMINATA.

These cases in general do not allow of an operation being performed; there is no room for a ligature. Dr. Mott, of America, has put a ligature on this vessel; and for a time the patient appeared to be doing well; but he afterwards died. The operation did him much credit: few would have dared to perform it; and those who might have dared, probably would not have known how. Dr. Mott is an excellent anatomist, and an industrious man.

ANEURISM OF THE DESCENDING AORTA.

When the descending aorta is the subject of aneurism, in its course through the posterior mediastinum, it very often breaks into the œsophagus, as in the preparation before me (pointing to one on the table), and a similar instance of which may be seen in the museum of the other hospital; when an aneurism presses on the œsophagus, adhesion of the coat of the sac to the œsophagus takes place, and afterwards an opening between the aneurismal bag and gullet is formed; the patient vomits a considerable quantity of blood, and soon dies. I have seen three instances of this kind of aneurism in persons who have died of some other complaint.

ANEURISM OF THE ABDOMINAL AORTA.

When the aneurism is situated above the cœliac artery, a pulsation may be distinctly felt at the scrobiculus cordis; and a symptom which distinguishes this complaint is, that the pressure on the stomach caused by the aneurismal bag produces nausea and vomiting, and small quantities of food are immediately rejected. There was a case in this hospital of aneurism just above the cœliac artery, where the patient had frequent vomiting, constant nausea, and could not bear to take any food. When the aneurism is lower down in the cavity of the abdomen, it often bursts into the intestine. Here is a specimen (holding it in his hand), where there is an opening in the jejunum and the fore part of the aneurismal tumour, of which the patient died. It was taken from a near relation of an eminent physician. Dr. S. brought him, in order

that I might give my opinion of a pulsation in the abdomen; he dined with me, we made as light of it as possible, and he was very cheerful at dinner; three weeks afterwards I was sent for to Henbury, to visit him; he was seized with discharge of blood by stool; he revived a little, and hopes of recovery were entertained by his friends; the following morning, however, the discharge of blood returned, and he died suddenly.

When the aneurismal tumour presses on the spine, absorption of the vertebræ takes place, as in this instance (exhibiting a specimen); you will also find a large swelling in the loins; but you must be on your guard respecting this swelling, lest it be mistaken for any other complaint. One of the surgeons of this hospital, but who is since dead, had a patient with a swelling in his loins; this the surgeon took for lumbar abscess; he took out his lancet, and introduced it obliquely, when some florid blood issued by the side of the instrument. Adhesive plaster was put to the wound, and it healed; he died, however, from the irritation of the aneurismal sac. On examination, it was found that the swelling was from the aneurismal tumour, the lancet had not penetrated into it, but wounded its coats. There is no pulsation to be felt in the loins from those tumours, nor was there any in the case I have just mentioned, and this is owing to the distance of the swelling from the aorta: thus men that are well informed in their profession may commit mistakes in these obscure cases. Aneurisms form in the cavity of the pelvis, in the ischiatic notch, and under the gluteus maximus muscle; you will be on your guard, therefore, when you find tumours on the nates. A man was sent from Gainsborough to the other hospital with an aneurism or tumour on the nates; I hesitated at first respecting its nature; hemorrhage came on from the bladder, when it was immediately thought that the aneurism adhered to the bladder, and an opening into it had been formed, as was afterwards found to be the case on examination. This is all it will be necessary to say to you on the subject of internal aneurisms, as the symptoms will vary according to the seat in which the disease may be found; the digestive organs will be in fault at one time, the urinary at another, according to the part on which the pressure of the aneurismal sac may rest; from the variety of symptoms, the diagnosis will of course be found to be difficult.

ON THE SIZE OF ANEURISMS.

The aneurism before me is the largest I ever saw (a beautiful specimen was here exhibited): it begins in the aorta at the emulgent arteries, and extends into the cavity of the pelvis. It contained blood (and I am not exactly certain how much), but of an enormous weight. Here (showing another specimen) is a popliteal aneurism of considerable

size. The greatest number of aneurisms that I have seen in one case is seven, and this specimen on the table was taken from the man to whom I allude. He died of an aneurism at the bifurcation; he also had one at the opposite ham, two above it, one in the groin, and two others. The iliac artery had been tied for femoral aneurism, and the patient did well for some time, but afterwards died. This man was a bricklayer's labourer; had been accustomed to mount ladders and carry weights up great heights; had been in the habit of exercising his lower extremities a good deal: he was not very muscular, and the fatigue of his occupation was more than he could bear. I may observe here, that some aneurisms are local, and others general; when they occur in the ham they are frequently only local; but when between the groin and ham, or in the middle of the thigh, you very commonly find disease of other arteries. Therefore, in popliteal aneurism, you expect to find the aorta and larger arteries healthy.

The age at which aneurisms generally occur is from 30 to 50: at that age exercise is considerable and strength less. In very old age this complaint is not so common. I have seen a popliteal aneurism in a man of 80, four or five years ago, at the other hospital; on this man I tied the femoral artery, and he did extremely well. On a man of 69 I have operated, and that case did well. I saw a boy in this hospital 11 years old, with aneurism of the anterior tibial artery. The man of 80 is the oldest, and the boy of 11 the youngest, that I have seen with aneurism. It is more commonly met with between 30 and 50, or rather between 30 and 40, than after that time. In cases of aneurism, the age is no objection to the operation.

With respect to the sex in which aneurism chiefly occurs, the male is certainly much more frequently the subject of it than the female. I should say that the proportion of males to females is about five to one; and if we take only cases of popliteal aneurism, the proportion of males would be considerably greater. When aneurisms do occur in females, they are generally internal. Females are rarely the subjects of aneurism in the limbs; the reason of which is, that they do not exert them so much as the other sex. In the course of my practice, taking hospital and private practice together, I have seen about eight cases of popliteal aneurisms in the female. The number of popliteal aneurisms which I have seen in the male is of course very considerable.

ON THE FORMATION OF ANEURISMS.

It is necessary that you should clearly understand the manner in which aneurism is produced. The first circumstance that takes place in an artery which is about to produce aneurismal swelling is, that it

becomes opaque, and slightly inflamed. A small yellow spot appears in the part where the aneurism is afterwards formed, and there is a slight efflorescence surrounding it. The process of absorption afterwards takes place, and thins the coat of the artery so that the texture becomes like that of a fine web. At the same time that this takes place, nature begins to set up a process of defence, which is beautifully exemplified in a preparation (it was exhibited to the class) made from the first aneurism which I had an opportunity of dissecting. This was an incipient aneurism of the aorta; you perceive that the coat of the artery has been absorbed, and opposite to the parts absorbed you observe a layer of adhesive matter, by means of which a defence is set up for the coat of the artery, and the progress of the disease for a time resisted. A covering is thus produced by the adhesive inflammation which shuts up the artery, so as to prevent the immediate escape of the blood. This preparation not only beautifully illustrates this process, but, by holding a candle on the opposite side of it, you will also observe the opacity which I have just described. As the coat of the artery becomes absorbed, the cellular membrane is glued by this matter to the outer surface of the artery. The next substance which becomes absorbed, if it be an aneurism of the ascending aorta, is the pleura, which forms a portion of the aneurismal bag. Then the lungs become absorbed, and form a portion of the bag; next the intercostal muscles, with the cartilages of the ribs; then the pectoral muscle; and at last the skin itself, forming the parietes of the aneurism, give way, and there is no longer any thing to prevent the escape of the blood.

Every aneurism was formerly supposed to be produced by the dilatation of the coats of the artery; but it has been found that this is not the case. It is generally produced, not by the dilatation, but by the absorption of the coats of the artery. For this knowledge we are indebted to Scarpa, who first accurately explained the mode in which aneurisms are produced. He thought they were always produced in this way; but they are sometimes, though rarely, formed in the way in which they were formerly supposed to be uniformly produced; namely, by dilatation. Here is a specimen of an aneurism of the aorta, in which the pouch is formed by dilatation, the coats of the artery still remaining.

Aneurisms are now and then the effect of the bursting of an artery under some considerable exertion. I have known two instances of this kind. A gentleman who was out shooting jumped over a ditch, when, on reaching the other side, his foot slipped, and he fell back into the ditch. At this moment he felt something snap in his ham, and when he attempted to walk he found himself lame from the accident. He was attended by Mr. Holt, a surgeon at Tottenham, and was afterwards

brought to town, where he underwent an operation for popliteal aneurism. In this case the aneurism began to form within a very short time after the accident, and it was not more than from three to five weeks afterwards that the operation was performed. The other case in which I have known an aneurism produced by the bursting of an artery occurred as follows:—A gentleman whom I was attending for another complaint, in attempting to raise himself in bed upon his hands, felt something snap in his right hand. When I next visited him, he told me the circumstance, and requested me to look at his hand. Upon putting my finger upon it, I felt a pulsating aneurismal swelling. I tried what could be done by pressure; but as this did not succeed, I found it necessary to tie the radial artery at the part where we usually feel the pulse. In this case a bag of considerable size was formed by the cellular membrane, instead of the usual mode. A pointed body introduced into an artery will produce all the appearances of aneurism, and require the same treatment. In whatever way, in short, aneurism is produced, the surgical treatment of it will be the same. A curious circumstance may be observed in dissecting an aneurism, after having turned back the aneurismal sac. You would suppose that when you had made an incision in the parts, you would immediately find the cavity in which the blood is contained; but this is not the case. On the inner side of the aneurismal sac a wall of adhesive matter is deposited in layers so as to enclose the blood as completely as the aneurismal sac itself. Here is a preparation in which the aneurismal sac has been taken away, and yet you find a bag remaining entirely formed of layers of adhesive matter on the outer side of the aneurism. The process by which nature throws up one layer of adhesive matter after another, until a complete bag is produced, is beautifully illustrated in this preparation.

You may distinguish aneurism from other diseases by the following marks:—If the aneurism be recent, by pressing your finger on the artery which leads to the aneurism, you will empty the aneurismal bag; but if the aneurism be of longer duration, and the pulsation be but slight, place yourself by the side of your patient, observe carefully the size of the swelling, and, by pressing your finger on the artery above, you will see the aneurism sink down as you make the pressure, though the sac will not entirely empty itself; and upon raising your hand suddenly, you will observe a jet of blood rush into the aneurismal sac, and raise it to its former height. In this manner an aneurism may be easily distinguished from another tumour deriving its pulsation from an artery: in the former case the pulsation will be felt over every part of the tumour, in the latter there will be no pulsation except in the direc-

tion of the artery. I have hurried over some parts of this evening's lecture, as it is my intention to show you the operation for popliteal aneurism, having a subject which will answer the purpose extremely well. I shall postpone, therefore, some remarks which I have to make upon the medical treatment of aneurism, and proceed at once to speak of the surgical operation for its cure.

ON THE CURE OF ANEURISMS.

Aneurisms sometimes undergo a spontaneous cure. This is a circumstance which you should bear in mind, because in cases where they are so situated as not to admit of surgical relief, it is a consolation to the patient to know that these diseases now and then cure themselves. There are many examples of such a spontaneous cure: I have myself seen some, and many more are to be found in surgical and medical authors. There is a preparation before us, taken from a man in the other hospital, who had an aneurism, situated just below the groin, which underwent a spontaneous cure. He was sitting before the fire, in one of the wards of the hospital, when he felt something burst in the upper part of his thigh. On examination he found no blood had issued out, and, in fact, the aneurism had not yet reached the skin so as to be adherent to it. His thigh was, however, enormously swollen; he was unable to use the limb, and was put to bed by the other patients. For three days after a pulsation was found in the aneurism; it then ceased, and the size of the limb began to diminish. At the end of four months the aneurismal swelling had considerably diminished, and he recovered the use of the limb. Six montns after he first felt this sensation, and when he had been discharged from the hospital, I met him as I was walking across the square of the other hospital, I said to him, "Why, Powell, you seem low-spirited; you ought to be cheerful, for you have had a very narrow escape." "Yes," said the man, "I am pretty well, sir, except that I have something alive in my belly."—(*A laugh.*)—"I hope you have," said I, "for it would be rather awkward if you had not." On putting my hand on his abdomen, I felt a pulsating swelling there. This aneurism shortly afterwards burst into the abdomen, and the man died. On examination of the body, it was found that the anuerism in the thigh, just below Poupart's ligament, had burst under the fascia lata; a great accumulation of blood took place, which pressed upon the vessel, and the femoral artery was obliterated. Sir W. Blizard had a patient at Walworth, with popliteal aneurism, which was cured spontaneously. Mr. Ford mentions several cases; and Dr. Baillie met with two cases of carotid aneurism, which cured themselves. Mr. Crampton, the surgeon-general at Dublin, has given an account of a case in which

the aneurism gradually wasted in the abdomen, and obliterated the aorta.

An account of a similar case has been given by Baron Larrey, the French surgeon. An Irish gentleman, whose name does not at this moment occur to me, in passing through this metropolis, on his way to Paris, showed me a preparation from a case of spontaneous cure of aneurism, in which the aorta was obliterated at the loins.

As the spontaneous cure of this disease, however, cannot be so far depended upon as to prevent us from performing the operation in all situations where the artery is accessible, I shall proceed to describe to you the mode of performing the operation in the different parts of the body, confining myself, in this evening's lecture, to the operation on the femoral artery. As we are occasionally under the necessity of performing the operation as it used to be done thirty-five or forty years ago, I shall, in the first place, say a few words on the old operation. The operation for popliteal aneurism used to be performed in the following manner:—A tourniquet was placed on the limb, and the patient laid on his face. An incision was then made in the ham, to the extent of the aneurism, and the adhesive matter and coagulated blood removed from the excavation thus made. The aneurismal bag was then wiped out with a sponge, and the tourniquet was slightly loosened, in order to mark the orifice of the artery. The surgeon stood ready with a probe in his hand, and as soon as he saw the blood issue from the upper orifice, he passed it into the artery, and then separating that portion of the artery from the remaining parts, put a ligature upon it. When he had done this, he again loosened the tourniquet, and as soon as he saw what appeared to be venous blood spring from the lower portion of the artery (for the blood from the upper portion of the artery is florid, as arterial blood usually is, but in the lower portion it has the appearance of venous blood), he introduced the probe into the orifice, and put a ligature on the artery as before. An operation like this, which exposed a very considerable surface, where the artery in the vicinity of the aneurism was diseased, and by which the bones were frequently injured, from the ulcerative process taking place, necessarily led very frequently to fatal results; so frequently, indeed, that it was a disputed point among the profession whether it was better to amputate in cases of popliteal aneurism, or to perform this operation. A man who had recovered after the old operation for popliteal aneurism could, formerly, get money by showing himself at the hospitals; at present it would not be worth a man's while to beg in this way. It is to Mr. John Hunter that we are indebted for the great improvement which has taken place in this branch of surgery. But for Mr. John Hunter, we might still have the same

difficulties to encounter, and patients labouring under this disease might still have been exposed to the same danger.

Mr. Hunter being an excellent physiologist, and an admirable anatomist, applied the powers of his active and inquiring mind to this subject. He said, "I have frequently tied the femoral artery in animals, without injury; why should not I put a ligature on the artery, in the same way, in the human subject?"

It is right, however, to observe, that Mr. Hunter was led to this train of thought by having under his care a case of popliteal aneurism, of such extent as to have reached the tendon of the triceps, so that there was no room for the application of a ligature between the aneurismal sac and the tendon. He determined, therefore, to make the experiment of tying the femoral artery, rather than amputate the limb. The first operation was not, as might be expected, performed in the very best manner. He was not content with a single ligature, but applied several, which were left hanging out of the wound, and which were afterwards discharged by a process of ulceration. Yet, under all these disadvantages, the patient recovered, and lived rather more than twelve months after the operation. On dissection, it was found that the femoral artery was obliterated as far as the arteria profunda. Since Mr. Hunter's time, several slight alterations have been made in the operation for popliteal aneurism, as every surgeon has his whim; but the principle established by Mr. Hunter remains the same, and that great surgeon has the undoubted merit of having substituted a simple and beautiful operation for one of very considerable difficulty and danger. I shall proceed to point out to you the several steps of the operation for tying the femoral artery in cases of popliteal aneurism. Mr. Hunter used to make the incision in the middle of the thigh, but experience has shown that it is better to make it one-third of the space downwards from the ilium to the internal condyle of the os femoris, because the artery is more deeply seated in the middle of the thigh than it is higher up; and there are, besides, many anatomizing vessels in the former situation. There are four steps in this operation: first, an incision through the skin, which lays bare the sartorius muscle; secondly, the division is to be continued along the inner edge of the sartorius, exposing the sheath of the femoral artery; thirdly, the incision through the sheath; and fourthly, the putting of the ligature round the vessel. I now make the incision, about four inches in length—[the learned professor proceeded to perform the operation on the dead subject]—which completely exposes the sartorius muscle; I then separate its inner edge from the parts with which it is in contact; this lays bare the sheath, and I now find the femoral artery and the vein exposed. There is a little septum

between the artery and the vein, which you should take care to observe. Introduce the aneurismal needle under the artery, taking care to disturb the parts as little as possible. Separate the cellular membrane to the extent of about an inch; and take care not to include the saphenus nerve, which is a small branch of the anterior crural nerve, in the ligature. If the saphenus nerve should be taken up, you will ascertain it by the irritability which is immediately excited. Having brought the ligature under the vessel with the aneurismal needle, all that remains is, to tie it with what is called a surgeon's knot, which does not slip. In this consists the whole operation. If you should have separated the artery from the sheath to any considerable extent, two ligatures will be necessary, which must be applied close to the part where the vessel is connected by the cellular tissue to the sheath; but if you should not have disturbed the artery, one ligature will be sufficient.

LECTURE XXI.

OPERATION FOR POPLITEAL ANEURISM.

As the time of last evening was occupied in performing the operation for popliteal aneurism, I left one or two points unnoticed which it will be important to bear in mind, therefore I will state them now. In the first place, it has been conceived that considerable relief might be afforded in cases of aneurism, by medical treatment. It is natural to expect that if by any means the action of the heart and arteries be diminished, the result would be that the aneurismal bag would yield less, and consequently be reduced: experience does not, however, justify this conclusion. I will tell you a case which exemplifies the truth of what I state. A gentleman came to town, and was operated on for popliteal aneurism; he recovered in the usual time, no untoward circumstance occurring during his recovery; in twelve months afterwards, he became afflicted with aneurism of the aorta, just at its curvature. He came to London, and having been under my care before, he applied to me again. On examination I discovered the aneurism. A consultation was held on this patient in July, when it was agreed that he should be kept low, be occasionally bled, and be allowed small quantities only of animal food, as it was hoped that by this means the action of the heart and arteries would be considerably lessened. Well this regimen was prescribed in July; the patient adhered very rigidly to it; but the February following he died, from the bursting of the artery into the chest, having lived a shorter period than usual in these cases. Now it is probable that he would have survived longer, had he been treated other-

wise; and I will explain to you how it is that keeping the patients so low does not agree with them; by keeping them so low, the constitution is rendered irritable, and then, whatever is lost in the momentum of the circulating fluid, is gained in velocity. I have seen loss of blood in the treatment of aneurisms occasionally useful. When the chest is affected, and breathing laborious, it will be right to take blood; and the best state in which the body can be kept is a little below par; that is, a little under the natural state. Strict attention must be paid to regimen; and it would be highly improper to give stimuli of any kind.

The second point is the chance of obtaining a cure by the application of pressure on the artery or aneurismal bag. Very many years ago, I had an iron ring made, with a pad on the outer side, and a screw on the opposite: this was put on the limb, pressure on the outside was made against the thigh, and on the inside against the artery; the use of this was worse than the operation. I applied it on a man at the other hospital, and I will tell you how long he kept it on—twenty-four hours only. In three hours from its first application he began to complain of pain; in a few hours afterwards it became worse; and in less than twenty-four hours the man said that he would submit to any operation rather than suffer the pain: therefore it is impossible to practise it. I have tried the same experiment on the upper extremity, but without its leading to any useful results. This plan of pressure on arteries does not succeed, and therefore ought to be abandoned.

Well, gentlemen, I will describe the alterations which have taken place in the mode of performing the operation for popliteal aneurism since the time of Mr. J. Hunter. Mr. Hunter made the incision in the middle of the thigh; the spot where it is made at present is one-third down, as in the middle of the thigh the artery is deeper situated; well, therefore, one-third down the thigh is the place where you ought to operate. Now, Mr. Cline (with whom I formerly lived) thought that it would be an improvement in the operation, if, instead of allowing the ligature to remain till the process of ulceration had begun, he removed it before that period, that hemorrhage might be prevented, and the operation rendered simple; and in the first case of popliteal aneurism which he had after he thought of this plan he tried the experiment, laid bare the artery, applied a broad ligature, and tied it firmly on the artery; but in order to prevent the knot slipping, he put between it and the vessel a small piece of cork. The first case on which he tried this succeeded perfectly well. [Here the learned professor, pointing to a specimen taken from the man on whom this experiment had been tried, showed that the artery was quite obliterated.] The ligature remained on till the adhesive process had begun; but before ulceration had taken

place, the wound suppurated, and ultimately closed. The patient died some time after of an affection of the lungs; and on examination of the body, the artery was found as just described; but on repeating this mode of operation, it was soon ascertained that it produced more irritation than the other. Here is an example (pointing to a specimen), in which the artery ulcerated a short time after the broad ligature had been applied; it led to great irritation, and the process of ulceration was rendered more speedy; therefore the operation cannot be performed; and Mr. Cline, with all the candour for which he is so remarkable, gave it up, as an operation, however feasible, yet one that was attended with considerable risk. Well, then, it has been proposed, and very ingeniously, by Mr. Abernethy, that two ligatures should be applied, and the artery divided between them. Now this idea arose from the circumstance, that where the ligatures are applied to arteries after limbs have been removed, no hemorrhage comes on; but the two cases essentially differ: in the one, where amputation has been performed, retraction of the artery, before the application of the ligature, has taken place; it is already drawn into the cellular tissue, and there is no danger of after hemorrhage from its retracting any more: but in the other, where ligatures are applied on arteries for the cure of aneurisms, as soon as the process of ulceration commences, hemorrhage often ensues from the retraction of the vessel, which had not taken place before. I had a case in the other hospital, which was going on well to the fifteenth day, when, as he was lying on the bed, a sudden rush of blood occurred, and had there not been a dresser in the room at the time, he must have died: ligatures were applied a second time. If an artery is whole when the ligatures are applied, separate it from the cellular membrane sufficiently to allow of retraction: but if the artery is divided, as after amputation, there will be no occasion, as the vessel has already retracted before the ligature is applied, and this is the reason that there is less danger from hemorrhage when one ligature only is applied, than when there are two. But this operation led to another dangerous consequence—there was the danger of the slipping of the knot. Mr. Cline, senior, in the operation for popliteal aneurism, put on two ligatures, and whilst the dresser was sitting by the patient, hemorrhage came on; the tourniquet was instantly applied, and Mr. Cline sent for: when he came, on looking into the wound, he saw one of the ligatures loose and floating in the blood. On examination, he found that the ligature had escaped from the upper part of the artery, and that the lower one had nearly slipped. He immediately applied two fresh ligatures. Therefore there is the danger of the knot slipping where there are two ligatures used; and on this account

it has been recommended that a needle should be put through the artery, with a fine ligature in it, as by this means the danger from hemorrhage would be prevented. It was found by Dr. Jones, who has written an excellent work on the methods nature adopts in restraining hemorrhage, that if fine ligatures were applied on arteries, they would cut through the internal coat, and leave the external undivided; the elastic coat would remain whole. He tried experiments on animals, and from these he learnt that, when fine ligatures are applied, inflammation takes place, and the adhesive process is, in a very short time, produced, by which means the canal becomes obstructed; he therefore recommended, that in operation for aneurisms, fine ligatures should be applied, only for a few hours, and then removed.

In consequence of this, I adopted the plan in the case from which I took this specimen (pointing to one on the table), in order to see if it would succeed; it has been tried in the following cases, and is an operation that ought not to be performed. In the first place, a fine ligature was put on the femoral artery, tied tightly, and in a few hours removed; the result of the operation was, that the pulsation was stopped for a short time, but in a few hours it returned, and the size of the aneurism began to increase. A consultation was held, and it was determined that a ligature should be applied in the usual way, and allowed to suppurate and ulcerate, and the patient did extremely well. In two other persons I tried this plan: one for an aneúrism on the popliteal artery, the other for an aneurism on the radial artery: in the first case I used a fine thin ligature, and tied it very tight; in thirty hours I loosened it. Now, when this man was on the table, I said to myself that the operation was not founded on a right principle. I looked at the wound and saw that the adhesive process had commenced, and that in drawing the ligature out, I had destroyed all the adhesions which nature had set up: the pulsation had not ceased, and I pulled the ligature tight, and allowed it to remain forty-two hours longer, and then removed it; thus, after the lapse of seventy-two hours in the whole, it did not return. Thirteen days after this, as I was coming into the square of the other hospital, one of my dressers said that hemorrhage had come on from the man in Job's ward, from whom the ligature had been removed, and that it was evidently arterial. I said that this was exceedingly curious. I went up, and found that it was the case; a tourniquet was applied; the hemorrhage did not return, and the patient did extremely well. If the ligature, after being on for seventy-two hours, does not produce adhesion, the uselessness of *temporary ligatures* does not admit of a doubt—*they ought to be abandoned*. In the aneurism of the radial artery, I removed

the ligature twenty-four hours after it had been applied, but the pulsation returned; I made an incision on the tumour, and applied a ligature above and below, and the aneurism was cured.

It would be an extremely desirable thing if any person invented a ligature composed of materials which would admit of solution: he would, by such an invention, greatly serve his profession. It has been said, that ligatures formed out of the untanned skins of kids will answer such a purpose; that they will become absorbed; but they do not, I understand, succeed. I thought that a ligature made of catgut would admit of solution, and I tried it on a man of eighty years of age, on whom I performed the operation for popliteal aneurism: the catgut ligature was cut close to the vessel; the wound healed over, and no bad symptoms followed. The experiment succeeded, it is true, in this case; but I have used the catgut ligature in three other cases since, and did not find it at all superior to the common ligature: in each of the three cases it came away by suppuration and ulceration, as in common cases; it did not therefore succeed. In the old person there was less tendency to inflammation, and that was the reason of it succeeding. I made some experiments on dogs, with a view to ascertain the solubility of catgut. I tied the carotid of a dog, and used the catgut ligature; in a fortnight after I killed the animal, and found that the ligature had not been dissolved, but that it had cut through the artery, and was situated in a cyst, like that which is formed round a ball, between the divided ends of the vessel, in a quiescent state; therefore this substance does not admit of solubility, but will remain sometimes without producing irritation. On the whole, catgut ligatures are not at all superior to the common ones. Some animal matter of the form of gluten, made into ligature, might do; but this is mere conjecture. At present there is no ligature known which is capable of being dissolved and removed by the absorbents.

Well, gentlemen, I have made all the observations respecting the improvements in the operation for popliteal aneurism that I intended, with the exception of the plan of cutting the ligature close to the knot, and then leaving it to its fate, and to come away as it can; but experience shows that the irritation which is produced by this mode is attended with great mischief. This is the plan Mr. Hunter adopted, when he put the ligature for the first time on the femoral artery, in operating for popliteal aneurism; the wound closed kindly, and the ligature afterwards came away by suppuration and ulceration. Since Mr. Hunter's time it has been tried again, but is now nearly given up by all in the profession. On the whole, rest assured, that the best mode of applying the ligature is that now commonly adopted: tie a tight knot

with a fine ligature, and then cut one end of the ligature close to the vessel, and let the other hang out of the wound. If in the operation the artery has been disturbed much from the surrounding cellular membrane, for an inch or so, apply two ligatures, and divide the artery in the centre, and there will be room for the retraction of the artery; but if, on the contrary, it has not been much disturbed, apply only the single ligature; broad ligatures must, however, on no account, be used, as they are very likely to produce constitutional irritation, and consequently cause the parts to suffer for a great length of time.

When the operation is performed, what you should do is this: you are to bring the integuments close together by means of strips of adhesive plaster, leaving, however, a small space between each, so that the matter may escape through the insterstices. No bandage, or roller of any sort, should be applied, as the blood-vessels of the limb would be compressed by them, and injury be done to the part. As for the position of the limb, it should be placed on a pillow, and on its outer side. If the patient were to rest on his heel, two evils would be likely to arise; 1st, there would be the necessity of supporting the knee by placing something under the ham which would stop the circulation in the vessels of the part; and, 2dly, there is danger to be apprehended from gangrene, from the heel resting long in one position, as this is apt to produce sloughing of the parts. The outer position, then, is the one you should choose, occasionally changing it, so as to prevent pressure in any one particular part.

Be on your guard, gentlemen, to preserve the warmth of the limb, for there is danger from gangrene in cold weather. Some years ago, I was very near losing a patient by not attending to this circumstance. A young gentleman, on whom I had performed the operation for aneurism, complained when I visited him (which was in the evening of the same day) of a weight in the foot: this induced me to look at the limb, which probably I should not otherwise have done, and I found that the foot was quite cold and benumbed, which was occasioned by there being no fire in the room at the time when the weather was quite cold. I sat down by the bed-side of the patient, and kept rubbing his leg and foot with a warm flannel till heat was restored to the limb. Ever since that time I have wrapped the limb up in a piece of flannel or a stocking, and sometimes put jars filled with hot water to the feet, particularly if the weather is cold, then the part will be preserved gently warm. I once saw a patient lost by the folly of a dresser at the other hospital. In the evening after the operation, seeing the limb a little swollen, he said to the sister, "Suppose you apply the white wash (liq. plumbi. super. and water) to this?" On the following morning gangrene came on, in conse-

quence of the cold produced by the evaporation ; power of the circulation in the limb became destroyed, and the patient died.

The means by which the circulation is carried on when the femoral artery is tied is by the arteria profunda ; from this anastomosing vessels are sent off, which communicate with branches from the anterior tibial. It sometimes happens that the aneurism will be reproduced by means of a vessel which comes off above the part where the ligature is applied, and enters the artery just above the aneurismal sac, and thus reproduce the aneurism. I scarcely should have mentioned this to you, if I had not seen an instance of this a short time ago, in a man at Guy's, who had been operated on by Mr. Key for popliteal aneurism, and who was discharged cured. This person came back to the hospital with another swelling in the ham, and a pulsation in it, in the same spot as the former aneurism : he had suffered considerable pain ; the integuments of the knee were very rigid, and the bone, from the long-continued pressure on it, had become in a diseased state. I amputated the limb, and found the aneurism reproduced of the original size, and an artery could be distinctly traced going from a little above the tumour up the thigh. It therefore happens that aneurisms are reproduced by means of arteries which proceed from above the spot where the ligature is applied, to just above the aneurismal sac : these cases are, however, extremely rare.

The time at which the ligature separates is generally from the twelfth to the fourteenth day ; the fourteenth day is generally the extreme ; the twelfth day the minimum of separation ; but it is variable according to the different kinds of ligatures used. I have seen a ligature remain on as long as twenty-eight days, where a broad one had been used ; I have known a ligature come off as early as the fifth day, but in this last case it was put on the brachial artery for a puncture made in bleeding ; on the eighth day it had come off, and no hemorrhage ensued ; therefore, if early inflammation ensues, the separation will be rapid ; but if there be a broad ligature, and the inflammation indolent, it will be from twenty-five to thirty days. Here let me give you one or two practical hints. If the ligature comes away, and without any hemorrhage, you will think the patient safe : he is not so by any means. A man was pushing a knife through a cable, when it slipped, pierced the left thigh, and wounded the femoral artery ; a tourniquet was applied, the best that could be made, for the accident happened on board a vessel in the river ; he was brought to Guy's Hospital, and I was sent for. On my arrival, I found the knife had perforated the artery, and therefore applied a ligature above and below the vessel ; on the fourteenth day, they separated, about nine in the morning, I believe ; about twelve he began to wash and clean himself, and soon after a jet of blood took

place. I was sent for, applied other ligatures, and he was obliged to keep his bed nearly as long as before, though I think the ligatures separated a day or two sooner. When they separate, therefore, be on your guard, and let the patient remain quiet two or three days afterwards.

The operation which has been shown to you, gentlemen, for popliteal aneurism, is the one used for aneurisms of the anterior and posterior tibial arteries, situated at the upper part. I saw Mr. Lucas, the father of Mr. Lucas, the late surgeon at Guy's, perform that operation for aneurism of the anterior tibial artery. But this operation is not to be performed when the aneurism in these arteries is near the foot. I have not seen an aueurism of the posterior tibial behind the inner malleolus, but I have of the anterior tibial on the front of the foot. I saw Mr. H. Cline, in an aneurism of the anterior tibial, cut down on the tumour, and apply a ligature just above it, but it did not succeed. In these aneurisms you must make an incision on the sac, and apply a ligature both above and below it.

LECTURE XXII.

ON THE TYING OF ARTERIES.

We are, this evening, gentlemen, to consider the subject of the taking up of the arteries in the different parts of the body, for aneurism.

THE APPLICATION OF A LIGATURE ON THE EXTERNAL ILIAC ARTERY.

It is not at all an uncommon occurrence to meet with an aneurism of the femoral artery just below Poupart's ligament, of which here is a specimen (pointing to one on the table), exactly similar to the aneurisms which occur in the ham. Now, with respect to recurring to the operation in this complaint, I have performed it in nine different instances for aneurism of the femoral artery; one of those persons was a surgeon, who has since married, and is extremely well. The mode in which the operation is performed is as follows:—[There was a subject on the table during the whole of the lecture, on which the learned professor showed each operation.] I do not make a straight incision in the course of the artery, but one of a semilunar form. I begin the incision a little above the abdominal ring, and extend it, in the shape of a crescent, to the edge of Poupart's ligament, and then continue it to about an inch and a half from the inner side of the spine of the ilium, where it terminates. By this incision I lay bare the tendon of the

oblique muscle; in the second I divide this tendon, and expose the internal oblique and transversalis muscles. Having arrived at this step of the operation, there will be no occasion to make any further use of the knife. The next step will be to raise the internal oblique and transversalis muscles from Poupart's ligament, by introducing the finger behind them. Well, having done this, you reach the passage of the spermatic cord, and you feel it distinctly; and then behind this the pulsation of the iliac vessel. You now draw up the internal oblique and transversalis muscles with the finger, at the same time elevating the spermatic cord a little, and then carry the finger into the abdomen, behind the peritoneum, and you ascertain the beating of the iliac artery. Having found the artery, I put the aneurismal needle into the opening, and introduce it under the vessel. You will recollect that the artery is accompanied by a vein, and that the vein is on the inner side; the artery on the iliac, the vein on the pubic side; the operation may be performed without the least difficulty, and is as easy as tying the femoral artery; there is only one circumstance that occasions the least danger; and that is the epigastric artery passes up from the pubic side of the iliac vessel, and on the inner side of the incision; but this, however, may be avoided. I will clean the artery a little from the surrounding parts, and take it up; it is very desirable to ascertain that the vein is not secured, because the interruption to the return of blood would be very injurious; if the artery should be exposed as much as it is on the subject before me (an inch and a half), two ligatures must be employed, but if a small portion only of the vessel is laid bare, a single ligature will be all that is required. When you use two ligatures, you will separate them from each other, drawing one upward, and the other downward, and leaving about three-quarters of an inch of the vessel exposed at the extremity of each ligature; for if this be not done, on dividing the artery, there will be danger of the ligature slipping off; the instrument with which the artery is usually divided is the probe-pointed bistoury; when it is done, retraction of the vessel immediately takes place; there will be no danger of including the nerve in the ligature, as the anterior crural does not accompany it; the vein and artery are included in the sheath, and the nerve is on the outer side. Now the edges of the wound are to be brought together, strips of adhesive plaster are to be applied, and the ligatures are to be allowed to come away by suppuration and ulceration.

Here is a curious specimen (exhibiting a preparation), showing the mode in which the circulation is carried on after the external iliac has been tied; the limb has been injected, and the anastomosing vessels are distinct; you also see the part of the iliac artery where it was tied.

If, then, you were asked what carries on the circulation after the external iliac has been tied, your answer would be—the gluteal principally: this passes out through the ischiatic notch, comes over the ilium to the groin, and enters the femoral artery, a little below Poupart's ligament; the second artery is the ischiatic, it arises from the termination of the internal iliac, passes out of the pelvis between the trochanter major and tuberosity of the ischium to the back of the thigh, and sends a few branches to the arteria profunda and external circumflex arteries; the third artery is the obturator, it passes out through the obturator foramen, and joins the internal circumflex artery; also the external pubic communicates freely with the internal pubic; therefore, if asked by what vessels the circulation is carried on after the external iliac has been tied, you would say, principally by the glutæal.

ON SECURING THE INTERNAL ILIAC ARTERY.

An operation of extraordinary difficulty; it has been performed by Mr. Stevenson, of the West Indies, and since by two other individuals, one of whom was Mr. Atkinson, of York, for the purpose of securing the internal iliac artery. None but a man endowed with the knowledge which Mr. Stevenson possessed would have dared to undertake such an operation; but Mr. Stevenson was educated by Mr. Burns, of Glasgow, an enterprising man, and a most excellent anatomist. He was brought up in his dissecting-room, and this it was led Mr. Stevenson to the idea of doing it. The operation consists of making an incision on the inner side of the spine of the ilium, by which you cut through the abdominal muscles, and reach the peritoneum, which you turn to the opposite side, in order that the artery may be reached. Now, in this operation there is considerable difficulty in separating the ureter from the artery, because it crosses just at the bifurcation of the iliac artery, and if a man had not been well acquainted with the anatomy of the part, as Mr. Stevenson was, he might include the ureter in the ligature, and thus cause destruction of life. I put the ligature round the artery (the learned professor continued showing the operation on the dead body), that you may see it is the internal iliac which I have secured; I would not, however, have ventured to perform this operation, if it had not been performed by another; I should have doubted my own powers and skill. It is an operation highly creditable to any one who performs it, but particularly to him who first attempted it. In what case, then, would a surgeon be called on to perform this operation? Why, for an aneurism of the glutæal artery, just at its commencement, so that it cannot be reached under the glutæal muscle; the operation must be performed in the manner I have just shown you.

TYING THE AORTA.

I was sent for one day to go to the other hospital to see a man with violent bleeding from just above the groin, in consequence of a rupture of the external iliac vessel high up; the man had long been a patient there; the integuments had sloughed, and the patient was exceedingly reduced from loss of blood. Under these circumstances, I thought myself justified in performing the operation of tying the aorta; for this step I have been greatly abused, but abuse, gentlemen, does no injury; it shows a malicious and bad disposition on the part of those from whom it proceeds, and on a man possessing the *mens conscia recti* it will have no effect, unless he be destitute of common sense. I was situated as I have just described when I tied the aorta; I knew that the aorta had been obliterated within the chest, and that the circulation had been carried on by the intercostal arteries going from above to just below the spot where the aorta was obliterated: the insides of the ribs are covered with numerous vessels. A gentleman of Dublin had a preparation, in which the aorta had been obliterated in the abdomen; and in this case the circulation was carried on by the lumbar arteries going from above to below the part where the vessel was obliterated: I had not the least doubt but that if the aorta was obliterated, anastomosing vessels would carry on the circulation, on the same principle as in any other part of the body; the greatest danger is not from gangrene when the ligature is applied on the aorta, nor is any thing to be apprehended as far as regards the carrying on of the circulation, but the danger consists in including the nerves, as I will presently show you.

Here is a specimen of a dog (pointing to one on the table), in which the aorta had been tied, and the circulation was carried on by the lumbar arteries; it is a very easy operation on the dog, and any one may perform it. I will tell you how you should do it; you must make an incision on the side of the transverse processes of the lumbar vertebræ, cut through the muscles and peritoneum, and then you may easily carry the aneurismal needle under the vessel, and bring it out of the wound, in order that you may see that you have not included the aortic plexus: if this be secured in the ligature, a paralytic affection of the lower extremities will be produced: now I wish particularly to state this, as I believe it to be entirely new, and that nothing new has been said on this subject in books. In the first two animals on which I performed this operation, I thought the paralysis was owing to the interruption of the circulation, but on repeating the experiment, I found it was produced by including the aortic plexus. If the aorta be well cleaned, and a ligature applied, and the vessel be returned to the abdomen, the dog

runs about as if nothing had been done to it; and in five minutes after, it will eat bread out of your hands, if it has been previously accustomed to it. The operation, I repeat, is exceedingly easy, and a boy may perform it. Well, after you have done this, wait a short time, kill the animal, and inject the arteries, you will find that the lumbar vessels on the inner side of the abdomen, and fore part of the spine, had carried on the circulation. The reason of the paralysis in the case I have just alluded to, was, that the aortic plexus was included, and the result was the destruction of life. Unfortunately, however, in the human subject you cannot make your incision near the spine, but must do it on the fore part of the abdomen to get at the aorta. If a case were to offer itself, similar to that I have told you of, I would immediately perform the operation again; and my own conviction is, that it can be done, and with success. At the time I tied the aorta, the patient appeared dying; after the operation had been performed, I was pleased in a remarkable manner, to see him in the evening sitting up in bed adjusting his clothes; if the vessel had not been secured when it was, he would not have lived an hour. On the following morning signs of constitutional irritation came on, in the evening he became much worse, and in forty hours from the time of the operation he died. Here is a specimen, (the learned professor exhibited the aorta, which he tied,) in which you see a coagulum above and below the spot where the ligature was applied, sealing the extremities of the artery. Now, gentlemen, if I should perform this operation again, the only difference that I would make, would be to cut the ligature close to the vessel, where it should take its chance, either to become encysted or absorbed. I commenced the incision in this operation in the linea alba, two inches above the umbilicus, and carried it to the same distance below, taking care, in my descent, to avoid the umbilicus, by giving it a semilunar turn or curve. I was astonished to find with what ease I could pass my finger down to the artery. However great the apparent difficulty of performing this operation, there was in reality none. The principal danger appeared to arise from the irritation produced in the intestines by the ligature, and that is the reason why I should cut the ligature close to the vessel. Time will show us whether this operation will be successful or not. I know, for my own part, that I would not hesitate to have my own aorta tied, if it would save my life for forty hours.

TYING THE SUBCLAVIAN ARTERY.

The middle of your incision should be opposite to the external jugular vein, and centre of the clavicle. Speaking anatomically, the view of the parts exposed in this operation may be thus described (Sir Astley

exhibited them): here you see the omo-hyoideus muscle crossing obliquely above the clavicle, below the sterno-cleido-mastoideus upon the inner side, and the jugular vein passing immediately opposite to the centre of the opening. Mr. Key informs me that in the operation which he performed at the other hospital for securing this vessel, that it was much facilitated by a free division of the clavicular portion of the sterno-cleido-mastoideus, and that after having done so, he was enabled, with a common aneurismal needle, to introduce the ligature under the vessel. Soon after commencing this operation, you meet with branches of nerves from the axillary plexus—you must carefully avoid including these in the ligature; for it would be a fatal error if you were to tie them. The scalenus anticus being the boundary of the artery on the inner side, you cut down for the purpose of finding its inner edge; this you will find a useful guide.

I have lately heard a person say, but do not know upon what authority, that the operation for tying the subclavian artery has been successful, but upon one side only. The first person who succeeded in this operation was Dr. Post, of Philadelphia; he is no *post* (a laugh), though his name is Post, but an exceedingly clever, industrious surgeon. Since this gentleman, several others have performed it, and the results favourable—a gentleman of the name of Liston is one—Mr. Bullen, of Lynn, in Norfolk, another—and you have lately seen a very successful one in the other hospital.

Mr. Keate, sen., the uncle of the present Mr. R. Keate, performed the operation below the clavicle, and the first time he did so it was completely successful; there may happen cases of axillary aneurism when the operation below the clavicle would be the best and safest, but unquestionably in ordinary instances that which I first described, viz. the one above the clavicle, is by far the most preferable. If, gentlemen, you were asked what artery chiefly supported the circulation after the subclavian had been tied, your answer would be the superior scapula. The late Mr. Taunton, lecturer on anatomy, had in his possession an excellent specimen of natural obliteration of the subclavian artery, and in this example the superior scapular had become very much enlarged.

TYING THE BRACHIAL ARTERY.

This artery very seldom requires to be secured in consequence of aneurism; but it is often rendered necessary from other causes, such as wounds, and some of these wounds indeed, as in bleeding, give rise to aneurism. When an aneurismal tumour at the bend of the arm has been thus formed, let me recommend you not to cut down upon it in order to secure the vessel; rather tie the brachial artery at the middle

of the arm, and not make an incision upon the swelling, at the middle of the elbow. To put a ligature upon the vessel here, amidst a mass of extravasated blood, is tedious, difficult, and dangerous. A young gentleman in the hospital bled a man, and in doing so penetrated the radial artery: thirty-seven ounces of blood were lost before he could succeed in stopping it; in three days the pressure caused so much pain that the man requested it to be lightened; this was done, and the bleeding returned; at the end of the week one of the surgeons deemed it prudent to secure the vessel, and he did so at the part where the wound had been made; the operation took an hour in performing, and it was excessively difficult to find the vessel. On the following day there were much irritation and inflammation, and on the tenth day from the accident he died. When I was with Mr. Cline, about forty years ago, one of my fellow-apprentices came up to me in a great fright, and said, "Lord! Cooper, what do you think I have done?" "Something very bad, surely," replied I, "or you would not look so pale."—"Why, I have just been bleeding a man, and in doing so have punctured his radial artery." "Well," I said, "is he in the hospital?"—"Oh, no, I have taken care of that, I bound up his arm as tightly as I could, and sent him away." In two or three days this man came back, and showed his arm to the surgeon, who, very properly, upon seeing what was the matter, made light of it, told him that a trifling operation must be performed, and in a few days he would be quite well. The man, upon hearing that he was to be again cut, would not consent, and left the hospital. As he was walking up Holborn, he happened to see the shop of a barber-surgeon, and in he went; this learned gentleman, after having inspected the tumour, said that he would soon give him relief by letting out the matter with his lancet; well, he thrust in the instrument, and the moment he did so, out gushed a quantity of arterial blood; this so frightened the barber, that he rushed out of his shop, and left the poor patient to manage for himself; fortunately some person happened to be in the way, who bound up his arm, and brought him to the hospital; one of the surgeons put a ligature upon the artery, and the man ultimately did well.

In tying the brachial artery, there is only one circumstance of any importance to bear in mind, and it is this: the vessel is accompanied by the median nerve; now, if you should include this in the ligature, it would either destroy the patient's life or cause paralysis of the limb. When you are about to secure the brachial artery, the direction for the incision is the inner edge of the biceps muscle, and this cut almost immediately lays bare the median nerve.

TYING THE ULNAR ARTERY.

When this artery is required to be secured, what is the anatomical direction for the incision? Why the tendon of the flexor carpi ulnaris: if you make your cut upon the inner side of this tendon, you will directly perceive the ulnar artery and ulnar nerve. This then is the part where the vessel may be most easily and safely tied.

TYING THE RADIAL ARTERY.

What is the anatomical direction here?—the answer is, the tendon of the flexor carpiradialis—cut upon the radial side of the tendon, and you will immediately find the artery close to its edge. Instead of putting ligatures upon these vessels at the wrist for aneurism, or wounds of the palmar arch, it has been recommended to employ pressure, by means of cork folded in lint, and bound down by a bandage. This practice, when used, leads to great inflammation and irritation—and I would advise you against using pressure generally, and more especially as regards the ulnar and radial arteries, as they can be so easily tied if you possess the least anatomical knowledge; and if you do not know anatomy you had better never touch the body at all.

TYING THE CAROTID ARTERY.

When this vessel is to be secured, it is desirable to make the incision as high as you can; the upper boundary, therefore, will be the angle of the jaw, and below the omo-hyoideus: make your incision first, then, high up, on the inner side of the sterno-cleido-mastoideus; upon drawing aside the edge of which you will distinctly see the omo-hyoideus obliquely crossing the artery. (Sir Astley here exhibited it in the dead body.) I have laid bare the carotid, and will now show you what you must principally take care to avoid in this operation, viz. the par-vagum, which accompanies the artery; if you were to tie this nerve you would endanger life; well then, when you are about to pass the ligature round the vessel, if you raise it a little, you can readily discover whether the nerve be in contact with it, and thus guard against an accident which might lead to a fatal result.

I will now conclude the lecture by saying a few words on aneurisms from arteries of the scalp. The first case of this kind that I saw was sent to me by Mr. Toulmin, of Hackney: in this instance I tied the artery proceeding to, and from, the tumour. If the aneurismal bag be not very large, you may cut immediately across it; apply a piece of doubled lint, then adhesive plaster, and over the whole a roller. If the swelling is small, that is, not larger than a walnut, adopt another mode,

which is to make a circular incision completely down to the occipito-frontalis tendon. In this manner the connexion between the blood-vessels and the aneurism is destroyed; and, by applying a dossil of lint and strips of adhesive plaster, you speedily succeed in getting rid of the disease. I saw a case of aneurism of the posterior aural artery, and, for its cure, tied all the vessels which were leading to and from it. I should have done better, by making, round the tumour, the circular incision that I have just described.

LECTURE XXIII.

ON HYDROCELE.

HYDROCELE is an accumulation of water in the tunica vaginalis testis; the anatomy, therefore, of those persons who say that the fluid is contained between the tunica albuginea and the tunica vaginalis is exceedingly faulty. Such a description is entirely false; and I scarcely need tell *you*, gentlemen, that the water is completely enclosed in the cavity of the tunica vaginalis. If the question was put to you, where is the water situated in hydrocele? the answer would be what I have just stated; and if you gave any other, it would be directly perceived that your knowledge of the anatomy of the part was but imperfect. The situation of the water in hydrocele is precisely similar to water in the pericardium; and what should we say of the man who would assert that this water was contained between the pericardium and heart? Why, gentlemen, we should feel assured that he was entirely ignorant of the matter, for water in the pericardium is situated distinctly within it: and so is water in hydrocele completely within the tunica vaginalis.

Hydrocele is a generic term, and a multitude of tumours have received this appellation. It is now, however, usually confined to two; I should, therefore, say that hydrocele is of two kinds, viz. 1st, of the tunica vaginalis; and, 2d, of the spermatic cord.

HYDROCELE OF THE TUNICA VAGINALIS.

Well, then, of hydrocele in the tunica vaginalis. The swelling at first shows itself at the lower part of the testicle, and gradually rises till it arrives at the abdominal ring; is of a pyriform shape; largest two-thirds of the way downwards; a little less at the bottom; and smallest at the ring. The common formation of hydrocele is unattended with pain, excepting, however, in those cases where it has been the result of inflammation; but, generally speaking, there is no pain, and the patient accidentally discovers the existence of the swelling, and often not until it

has arrived at considerable magnitude. Commonly there is no redness of the scrotum—no discoloration.

The ordinary situation of the testicle in hydrocele is two-thirds of the way down the tumour, at the posterior part. Here, I say, is its usual situation; but in this respect it sometimes varies, as I shall presently show you. In performing the operation for hydrocele, it is of the utmost importance that you should have an exact knowledge of the situation of the testicle, for ignorance in this respect has often led to its being pierced by the trocar. You can easily discover the position of the testicle, by a careful examination of the swelling, and by squeezing it with some degree of force at every part. When you press upon the testicle, you will find that part of the tumour more firm; the patient will manifest much uneasiness, and complain that you give him a good deal of pain; in this manner, then, you can readily discover where it is situated. The weight of the tumour is but little (this of course means comparatively); when you lift it, you will be astonished at its lightness, which will at once convince you that it is not a solid substance. The next thing you notice is, if the part be not very much distended, that the swelling will be moveable, *i. e.*, if you firmly grasp it at its base, the fluid will ascend, and the tumour increase at its upper part; therefore, its lightness, mobility, form, freeness from pain, and the history of the case, constitute its distinguishing characters from other diseases. But there are two other marks by which the disease may be known, one of them decisive, and the other nearly so: these are, first, its sense of fluctuation; and, second, its transparency. I have just told you, that if you press upon the lower part of the swelling, it would decrease there and increase at the upper part; fluctuation at this time becomes evident to those who are accustomed to such examinations. Its transparency, or rather its semi-transparency may be discovered in the manner I shall presently explain to you. This characteristic feature has been denied; I have certainly seen the tunica vaginalis so much thickened in very old cases of hydrocele, and in persons who had long resided in hot climates, that the examination required nicety and caution; but still a little art, as I shall presently explain to you, will enable the surgeon to form a correct diagnosis.

Well, then, such are the common marks by which you distinguish hydrocele; but there are other varieties, and these I will mention to you: first, the water of hydrocele sometimes forms *two* swellings. I have before told you that the shape of the tumour is usually pyriform, and that the water gradually rises till it arrives at the abdominal ring; now, in this variety of two swellings, a portion of the water collects above the ring, giving rise to a tumour there; thus a swelling is formed above

and below, the narrowest part being at the ring. A surgeon unacquainted with this circumstance, upon looking at such a case would say, "Oh! this is not hydrocele, but hernia," and he would be strengthened in that opinion by seeing the upper part dilate upon coughing, in consequence of the impulse that it would receive from the contraction of the abdominal muscles. Its transparency and lightness, however, would readily enable him to distinguish this complaint from hernia. Why, this very day, a gentleman came to me under the following circumstances: when he came into my room, he informed me that he had been twice tapped, and that he did not think the operations had been well performed: I looked at the swelling, and found that it extended to the abdominal ring; I examined the part very carefully, and requested him to cough; the moment he did so, the swelling was evidently forced down; well, said I, this may be hydrocele, but I shall not tap you; I requested a candle to be brought; no transparency was observable; I desired him to lie down upon the chairs, when I found it to be hernia, and reduced it. This, then, shows how cautious we ought to be in such cases, before we introduce the trocar, for I might have been misled by the history of this case, and proceeded at once to have performed the operation of tapping: had I done so, in all probability, the trocar would have passed into this gentleman's intestines. It was a hernia which had succeeded hydrocele.

Another variety met with, is that in which a fluctuating swelling will remain, after a considerable portion of water has been removed. The first case of this kind that I saw was sent to me by Dr. Chester, and Mr. Roberts, of Gloucester. The patient had been under the care of those gentlemen, and had been tapped for hydrocele: a quantity of water was drawn off, but still a swelling remained. He was sent to town for me to see him, at which time the hydrocele had become nearly as large as before. Upon hearing the history of this case, the impression upon my mind was, that when the operation for tapping had been performed, the operator had let the canula slip out of the tunica vaginalis, which circumstance, I thought, led to the retention of a portion of the fluid. Well, believing this, I passed in the trocar and canula myself; some water came away, but not all; this struck me as being very strange, for I had taken great care to keep the end of the canula within the tunica vaginalis. I examined the remaining swelling; found fluctuation; then tried it with a candle, and saw that it was transparent. Well, sir, I said, this is water now, introduced the trocar again, a little way from where I did at first, and off it ran. The fluid, in the second instance, had nothing of the yellow appearance of that which is drawn off in hydrocele, but, on the contrary, was as clear as water.

I have before mentioned to you, that the testicle in hydrocele is com-

monly situated at the back part, and two-thirds of the way downwards. Here, however, there is great variety, and it is even sometimes found in front. I will tell you how this happens. The person is attacked with inflammation in the tunica vaginalis, before any collection of water has taken place; adhesive matter is thrown out, probably at the fore part, which occasions permanent adhesion between the middle and outer coat of the testicle: should serum be secreted after this, of course it would be lodged at the sides and posterior part. What would the consequence be, if, in such a case as this, the trocar were to be introduced in the usual situation? Why, that it would pass into the testicle. A gentleman of great importance in this town consulted his regimental surgeon for a swelling in the scrotum; it was pronounced hydrocele. The operation of tapping was resolved upon; but when the trocar was introduced, it passed only into a solid substance, and no water came away. The surgeon stared, and said, "Sir, I am a little mistaken in this case; you have a diseased testicle here, instead of hydrocele, as I at first supposed, and it is necessary that the diseased part should be removed." But the gentleman, being a young man, did not think it would add much to his enjoyment to lose a testicle—*(loud laughter)*—and thought that it required some hesitation before he resolved upon such a measure; consequently he did hesitate, and the result was, that he consulted another surgeon. Upon examination, the testicle was found at the fore part of the swelling, and the fluid at the sides and bottom. Whilst taking off his clothes, some copper-coloured eruptions having been seen, he was asked if there was any enlargement of the bones; when the right tibia was found considerably swollen. He was put under a course of mercury, for these secondary symptoms, which soon got well. The hydrocele still remained, and as the surgeon who first saw this case was right in his first opinion as to its nature, he was sent for to repeat the operation of tapping. He now introduced the trocar at the side of the swelling, instead of the fore part; the water was withdrawn, and the patient perfectly recovered. This case shows the necessity of extreme caution in determining the situation of the testicle before the introduction of the trocar.

The testicle is sometimes found at the bottom of the swelling. Now (holding up a preparation), here is a curious thing. This hydrocele, you observe, was situated between the testicle and abdominal ring, the testicle being quite at the inferior extremity of the tumour. Adhesive inflammation, in this instance, had completely united the middle to the outer coat; consequently, the descent of the water had been prevented.

Here is another preparation, in which the water had collected at the sides, adhesion having taken place both before and behind.

Here is another preparation, in which it appears as though the hydrocelic sac had arisen from the tunica vaginalis, in the same manner as an aneurismal sac is occasionally formed from the coats of an artery.

In hydrocele, it sometimes happens that the fluid is formed in a distinct bag or cyst, between the tunica vaginalis and tunica albuginea; this complaint is usually combined with common hydrocele.

There are great varieties with regard to the state of the tunica vaginalis; and it is found much thicker in those persons who have for a long time resided in hot climates, such as the coast of Africa, or West Indies, than in such a climate as our own. When, therefore, you find a tumour about the testicle, apparently solid, but of little weight, you are to be very cautious in your diagnosis; you are somewhat called upon to explore the swelling with a lancet; that is, puncture it lightly where there is the most appearance of fluctuation; and often, when least expected, the testicle will be found in a healthy state.

After the water has been discharged, it frequently happens that the tunica vaginalis, in consequence of its extreme thickness, will remain in large folds.

The tunica vaginalis has, in a few instances, been found ossified. Mr. Warner, formerly surgeon at Guy's, met with an example of this. There is a similar preparation in the museum at the other hospital, which any of you might see by applying to Mr. Stocker. Mr. Beaver, formerly a student here, accidentally discovered a case of it in our dissecting-room.

Then, with regard to the contents of hydrocele, it is usually yellow serum. But sometimes small cartilaginous bodies are found in the fluid; when these are seen, they prove that the hydrocele had existed for a very long time, and are always proof of its age.

There is another variety which I ought to mention here; it has been called the *congenital hydrocele*, in consequence of a communication having from birth existed between the tunica vaginalis and cavity of the abdomen. When the parts are natural and perfect, there is no opening leading from one to the other, as you know; but occasionally the natural closure does not take place, and then a fluid may descend from the abdomen, and collect in the tunica vaginalis. In this manner, sometimes from ascites, the scrotum will become greatly distended; and here, in such cases, is the best situation for tapping. The hydrocele of which I am now speaking may be readily discovered from any other,

in consequence of your being enabled, with ease, to return the water into the cavity of the abdomen: this you can effect by placing the person upon his back, and then elevating the scrotum. The first case of this variety of hydrocele that I saw was sent to me by Mr. Dobson, of Harrow. The patient being a very young person, I was apprehensive of peritoneal inflammation, if I injected; it occurred to me that I might succeed in shutting up the communication with the abdomen by means of a common truss, when I might afterwards safely tap and inject for the radical cure. A truss was accordingly applied over the ring, and ordered to be worn for two years; at the end of one year Mr. Dobson wrote to me to say that the lad was quite cured. Now this I did not expect. What had happened was this: the pressure of the truss had succeeded in destroying the communication between the tunica vaginalis and abdomen, and then the water had become absorbed. I advise you, should you ever meet with such a case, to pursue a similar practice; for, as you see in this case, the opening which exists may be closed, and if the person's health be good, the water may be absorbed, thereby rendering an operation unnecessary. The result of that case gratified me exceedingly.

Diagnosis.—Now then as to the *best* mode of distinguishing hydrocele: When a patient comes to you with a fluctuating swelling in the scrotum, in which the testicle is enclosed, you order a candle to be brought; then squeezing the tumour at the posterior part, you distend the front so as to make it tense; apply the skin of the little finger, and that covering its metacarpal bone at the outer side, to the surface of the tumour, and then cause the candle to be held as close as possible opposite to where the two skins meet. In this way you will never fail to discover the transparency of hydroceles which are formed in this climate; and it is only the clumsy, awkward mode in which the experiment is made, that occasions any person to be unsuccessful in it, which, if conducted differently, would lead to a satisfactory result. I have seen individuals, however, from Sierra Leone and the West Indies, in whom the tunica vaginalis had become so much thickened as to render the hydrocele perfectly opaque.

Diseased testicle may be easily distinguished from hydrocele by its weight and flatness, and the pain and sickness which it occasions; and often by the discoloration of the skin covering it, and by the semi-transparency and lightness of one tumour and the heaviness of the other.

There is one disease somewhat difficult to distinguish from hydrocele, viz., hæmatocele: this is a collection of blood in the tunica vaginalis testis, and produces in form an exactly similar tumour to

hydrocele; but the history of the case is quite different, and your best guide. If you ask how it happened? the answer is—"Why I was riding, when the horse, became restive, began to plunge, and threw me forward on the pommel of the saddle; I soon afterwards discovered this swelling." Then, if you inquire whether there were any marks or bruises in the skin of the scrotum, the answer will be, "Oh, yes; it was black and blue." Whenever you find a swelling thus suddenly formed after a blow, having the figure of hydrocele, you may be certain of its being blood. But, gentlemen, guard against mistaking this complaint for diseased testicle. I was once present in the other hospital when a healthy testicle was removed, owing to this error; and some years since, one of the first surgeons in this town, after having removed a tumour from the scrotum; and when the gentlemen were leaving the theatre, desired them to wait a moment, and he would show them the disease of the testicle. However, upon cutting the part open, the great bulk proved to be blood, and the testicle was in a perfectly sound state. Such an unfortunate occurrence as this a man must for ever lament.

The cause of hydrocele appears to depend upon increased secretion, as the vessels are dilated, though there is generally no inflammatory action.

Inflammation of the testicle will give rise to hydrocele; for as the inflammation disappears, hydrocele forms. This can generally be removed by exciting absorption; for which purpose give the pil. hydrarg. submur. comp., and apply to the scrotum a lotion composed of liq. ammon. acet., having dissolved in it some of the ammon. mur. These means will be found to have considerable influence in this hydrocele, which results from inflammation; but in the other they have none.

Hydrocele, if left to itself, will often undergo spontaneous cure. A man was brought into the other hospital with a sloughing of the scrotum, in consequence of an inflammation occasioned by a hydrocele; the water, was, in this case, discharged by a natural process, and nature performed a radical cure by effecting a permanent adhesion of the parts.

I shall conclude this lecture by describing to you the *palliative* treatment of hydrocele, reserving what I have to say on the *radical* or *curative* treatment until we next meet.

When persons are afraid of the curative treatment, or when it would be attended with inconvenience, as also in old people, the palliative will be demanded. It is a very simple operation, and one which any person can perform. Remember that the testicle is usually two-thirds of the way downwards at the posterior part; introduce, therefore, the trocar in the fore part obliquely upwards, indeed almost perpendicularly, to

avoid wounding the testicle; but as I have before shown you that the testicle occupies different situations in the tumour, you cannot introduce the trocar with safety until you have ascertained the precise spot where the testicle is lodged, and then you will of course take care to avoid it. Let me observe, that whether you perform the operation for the palliative or curative treatment, withdraw the trocar the instant you believe that the canula is within the tunica vaginalis: and once having the trocar in, take care to keep it there until the operation be concluded; and the most effectual way to do this is by grasping the tumour at the posterior part, so as to keep it tense where the trocar entered. I generally use a trocar and canula of small size. Some persons recommend a lancet and probe to be employed; it is mere nonsense: if they had ever performed the operation, they would not do so. Such suggestions can only emanate from people who are destitute of experience and knowledge.

If you wish to accomplish this operation bloodlessly, to prevent internal bleeding, and the formation of hæmatocele, keep the patient, at the time you are doing it, in the erect position. There is no necessity for any after application; on the following day the wound will be well.

It requires repetition in proportion to the dropsical tendency existing in the person. In some it will be necessary once a month; in others, once in three months; but, generally speaking, the usual time is every six months.

Insignificant as this operation appears, it has been known to cause the destruction of life. Two instances are within my own knowledge. One of the cases was operated upon by Mr. Green, who resides a few miles from town, and the other by myself. Mr. Green's case was published in the journals, therefore I need not scruple to mention it; but Mr. Green possesses too much manliness to regard a notice of an unsuccessful case, and it must be a mean despicable mind that would. The case is as follows:—An elderly man applied to Mr. Green with a hydrocele, which he a few days afterwards tapped. The following day the man's business led him to walk to town: on the next day his scrotum became inflamed; the third there was a gangrenous spot; and, on the fifth day from the operation, he died.

The other case was the father of one of our dressers. I performed the operation on a Saturday; the following day he walked to Pancras church; on the Monday inflammation began to show itself in the scrotum, when he sent for me; on the Thursday gangrene had taken place, and on the Saturday week after the operation he died.

Let me advise you then, whenever you perform this operation in old

persons, to make them keep their beds for a few days afterwards. Some individuals are destroyed by the slightest touch; while others, on the contrary, are not killed, do what we will to them.

LECTURE XXIV.

ON THE CURE OF HYDROCELE.

Hydrocele is not cured by the accidental bursting of the sac; when this takes place, it is followed by a temporary cessation of the hydrocele, which either returns again, or is succeeded by hæmatocele. A gentleman who had been subject to hydrocele for many years went to the continent, and whilst riding out on horseback, struck himself against the pommel of the saddle; for several hours afterwards the swelling became considerable; diffused instead of circumscribed; absorption, however, soon took place; the swelling gradually lessened, and the gentleman thought that his hydrocele was cured, in fact, he congratulated himself on it. Not long after this the swelling returned, and when he came to England, he called on me, and I performed the operation for hydrocele, which presented nothing peculiar. Another case of the bursting of a hydrocele occurred in the person of Dr. Saunders, of the other hospital, a person well known in the profession. Whilst standing on a chair to reach a book, he slipped his foot, by which means he received a blow on the scrotum, which was enlarged from a collection of water in it. Mr. Lucas, late surgeon of Guy's, who had been in the habit of tapping him for this complaint, was sent for immediately after the accident, to perform the operation again; the swelling was very large, and Mr. Lucas, not at all suspecting that the character of the complaint was changed, put a trocar into the scrotum, but no water came, which alarmed the doctor considerably. A consultation was held, at which many of the most eminent professional men of this town were present; the scrotum was swollen and harder than natural, blood was extravasated into the tunica vaginalis; it was determined to attempt to relieve the swelling and ecchymosis by stimulant lotions, but these failing, an incision was then made into the scrotum, when there was found some coagulable blood, which had been substituted for the water. Thus then a blow on a scrotum affected with hydrocele will change that disease into hæmatocele, which can be afterwards cured by an incision.

The cure of hydrocele is effected in three ways: 1st, by absorption; 2dly, adhesion; 3dly, granulation. Now I observe to you in the last lecture, that when hydrocele is produced in the common way, medicine or local applications have hardly any influence on it; when it arises from

a relaxed state of the vessels, stimulating medicines and blisters have no effect on the complaint. But I also stated on a former evening that hydrocele is produced by an inflammatory state of the parts, and that in these cases absorption by stimulating lotions should be promoted. I will now further add, that in young persons and children, who are not unfrequently subject to this affection, cure by absorption alone is effected, that is, by giving the hydrargyri submurias, scammony, rhubarb, and other medicines, so as to dispose the constitution to absorb. The liquor ammoniæ acetatis and ammoniæ murias are the local applications generally made use of to promote absorption in the parts, and what we do to facilitate the operation of these remedies, is, to have a bag or suspensory truss to hold the scrotum, and this is fastened by two tapes round the abdomen, just below the umbilicus, and kept constantly wet with those fluids, in order to stimulate the absorbents; therefore be on your guard about performing an operation for hydrocele in young persons, as the cure can be effected by absorption alone; there are a few exceptions, however, to this rule, but they are exceedingly rare, as in almost every case of hydrocele in young persons or children, the water will be absorbed.

With respect to the adhesion of the tunica vaginalis in the cure of hydrocele, this is effected in three ways, by injection, seton, or incision; but the use of injections does not always produce adhesion of the tunica vaginalis; here is a specimen (pointing to one on the table), which was taken from a captain of a ship one morning, on whom I performed the operation for hydrocele by injection, by which he was relieved of every symptom of the complaint; several years after this he was taken extremely ill, and I was consulted by his attendant surgeon; he was dying of some organic affection; I desired the surgeon to remove the testicle and tunica vaginalis from the side on which the operation had been performed, as soon as the patient was dead, which was done; on examination it was found that the tunica vaginalis did not adhere completely, there were a few adhesions in some parts but not generally; the injection did not produce adhesion, but a new series of actions was set up, a deposit was secreted, and the ends of the arteries were sealed, so that any furthea secretion was prevented.

The process of granulation is set up when an incision is made in the scrotum, and extraneous bodies introduced, but this requires considerable caution; some surgeons use one mode of cure, some another; various are the operations which have been proposed, but most have now yielded to that of injection. In the operation by incision you divide the scrotum and tunica vaginalis, on the front part, so as to allow the water

to escape, but it was soon found that this was not sufficient to effect a cure, and it was then recommended, that after the incision had been made, a portion of the tunica vaginalis should be cut out: but this operation is followed by high constitutional irritation; it is true that it sometimes effects a cure by preventing the return of the hydrocele, but it also does it by killing the patient; in fact, the very last time that I saw this operation performed, a violent inflammation and sloughing of the scrotum ensued; why, gentlemen, any one rather than undergo such an operation, would submit to have a hydrocele all his life; the mode of relief is too cruel for so trifling an inconvenience. The next mode is that of introducing a tent into the tunica vaginalis; a small incision is made through the tunica vaginalis and scrotum, and a piece of lint or sponge is introduced, so as to prevent the sudden escape of the water; the water gradually issues out, during which time adhesion and granulation often takes place; but this sometimes fails. Caustic and setons were formerly very much used, two remedies, about which there was much bandying and quarrelling among the members of the profession as if the world were at stake on the issue—two remedies now which are not only generally abandoned, but which I should be ashamed to own ever having used; such is the folly of quarrelling in our profession; as for arguments on subjects which are only to be settled by observation, they are of no use; and persons who argue thus *à priori*, without a knowledge of facts, which alone ought to form the basis of argument in our profession, want that judgment which conducts a man best through life; but many were the advocates of caustic as a cure for hydrocele; and the way it was used was by taking the potassa fusa, and applying it to the fore part of the scrotum, till an eschar, of the size of a sixpence, is formed, which produces an irritation to the extent of half an inch, or three-quarters of an inch around, and then the eschar so produced destroys the skin and tunica vaginalis; as soon as the inflammation arises, the water escapes, then the part sometimes become glued together, and granulations arise. Well, gentlemen, this remedy soon fell into disrepute; 1st, on account of its uncertainty; 2dly, because it was dangerous to life; here is a specimen (pointing to one on the table), taken from a person who died from the application of caustic, and this gives me an opportunity of showing you the state of the parts after the use of this application. The operation with caustic is dangerous to life, and ought not to be performed.

OPERATIONS AT PRESENT USED FOR THE CURE OF HYDROCELE.

There are but three operations I know of, which are occasionally had recourse to in the cure of hydrocele: 1st, setons; 2dly, incision; 3dly, injection. Setons are very rarely used, but I tell you, that they may now and then be, advantageously. The seton should be made in the following way: you should take a curved needle, and carry it into the tunica vaginalis and scrotum, just at the point where the trocar had been previously introduced, and include two inches above the point where the needle enters, and bring it out sufficiently long; the result is, inflammation generally ensues, water gradually escapes, and as this takes place, adhesion of the tunica vaginalis comes on; this operation for adults has been generally abandoned, because better means have been employed; it is in those young persons whose hydroceles do not give way to the absorbent plan before-mentioned: then, if children about two or three years old have hydroceles, rather than inject, use the needle and thread: the thread should be allowed to remain for ten or fourteen days, till inflammation and the adhesive process be set up; this plan is much better for children than that of injection, because there is no difficulty in doing the former, and there is considerable in the latter: for the operation of putting a ligature through the scrotum and tunica vaginalis is effected before the child knows any thing about it; in fact, after it is done, the child may run about, the knot being allowed to remain; the water escapes by the side of the seton: for children, then, I believe this to be the best mode.

The second plan is by incision. There is a difference in performing this operation now to what was done by Mr. Hunter, who had recourse to it in preference to that by caustic or seton; Mr. Hunter used to put a little poultice into the part, after the opening had been made into the tunica vaginalis; a surgeon, who was present when Mr. Hunter was performing the operation, had mistaken the plan which he adopted, for having heard of the introduction of a poultice into the wound, he had brought materials for making one, flour, &c., and he began to mix it up in the man's scrotum; Mr. Hunter, always ready to catch an idea, sprinkled after this some meal or flour into the wound, so as to prevent instantaneous adhesion, and promote granulations. This operation gives you the means to prevent the return of hydrocele in many cases, yet it is an operation not perfectly unexceptionable; there are cogent reasons against performing it, but if there be any suspicion of a disease of the testicle, it may be done. In old persons it is not justifiable, and I would advise you against doing it in them. Here is a

specimen (exhibiting one) where death ensued after the operation I have just described; a surgeon to one of these hospitals, who has long since been dead, introduced a bit of lint, dipped in oil, into an incision which he had made into the scrotum; the result was great constitutional irritation, and death; therefore there is danger of this operation in old persons, from the irritation which is likely to arise.

I shall now proceed to describe to you the operation which has superseded all others, namely, the cure of hydrocele by injection. At the time I was attending Mr. Hunter's lectures, the town was divided in opinion as to the best mode of performing the operation for hydrocele. So great was the difference of opinion among the students of the different hospitals, that it was quite ridiculous to observe their warmth on this subject, when there arose a plain, simple, effectual operation, which every body has since adopted. For this we are indebted to Sir James Earle, who, in thinking upon this subject, conceived that injection of the tunica vaginalis was likely to be the best means of producing adhesion, and preventing the further formation of disease. Thus he proposed at once a most ingenious, but simple, mode of curing a disease, about which there had been so many disputes. I cannot help feeling delight, when I find a brother in the profession rendering himself useful to mankind by an invention of this kind. When we see so much trash issuing from the press, which is called surgery, it is gratifying to find, in a work like Sir James Earle's a simple and effectual plan of curing a disease proposed, and at once adopted by the whole profession. I do not think Sir J. Earle has received the due meed of merit to which he is entitled for this improvement. I have, myself, always spoken of him in the same terms as this evening, and I shall ever continue to do so. The instruments required for this operation are an elastic bottle, with a stop-cock, a trocar, and canula. The elastic bottle should be of moderate size, and only half the quantity of fluid contained in it should be thrown in at a time, lest the action of the cremaster should force a part of it into the cellular tissue. If this happens, inflammation and sloughing may take place around the part at which the canula is introduced. The trocar should be two inches long, and the canula should be but small. The trocar and canula should be put separately into the box, for if you are obliged to put the trocar in the canula, it will soon contract, rust, and be unfit for use. The fluid used for the injection should be of a stimulating kind. If you use port wine, the proportion of wine and water should be half and half. If it be old port wine, you may mix five parts of wine with three of water; but if the wine be such as is commonly got at taverns and public-houses, in which there is a good deal of logwood or sloe-juice to make it astringent, and a good deal of brandy to make

it strong, a less proportion of wine must be used, as the injection would otherwise be too stimulating to the tunica vaginalis. Brandy, or spirits of wine, may also be employed; in the latter case, take one part of spirits of wine to fifteen parts of water. The injection which we generally use in the hospitals is the sulphate of zinc, in the proportion of one drachm to a pint of water. A gentleman, on being told that we employed the sulphate of zinc in hospitals, for injection in hydrocele. exclaimed, "Oh, I suppose you do this to save your wine." It is not to save our wine, however, gentlemen, that we prefer this solution, but because we are better enabled to judge precisely of the strength of the stimulus by the use of the sulphate of zinc, than by that of wine, which is subject to so much adulteration. Water itself will produce a stimulating effect, if used cold. A gentleman, whose name does not immediately occur to me, has written a treatise, in which he produces several cases of the successful treatment of hydrocele, by an injection of cold water. You must not suppose, however, that one fluid will answer the purpose as well as another; for I remember a case in which an injection of milk, which was used by the surgeon on the supposition of its being a bland fluid, produced most horrible inflammation. The tunica vaginalis suppurated, and when an incision was made to discharge the matter, the milk came out in curds, and a great quantity of pus had been produced. Be upon your guard, therefore, against making experiments of this kind. When you inject for hydrocele, you should place the patient in a recumbent posture, which will enable you to perform the operation more steadily. Before you introduce the trocar and canula, make it a rule to squeeze the scrotum and tunica vaginalis, so as to make the part where the fluid is most distinct very tense; then introduce the trocar and canula obliquely, in the same manner as in the palliative mode of treatment. Having passed the trocar and canula into the tunica vaginalis, withdraw the trocar, and push the canula alone carefully upwards, so as to prevent any injury to the testicles or spermatic cord. You should nip the tunica vaginalis round the canula, to guard against the instrument being diverted, and thus throwing a portion of the fluid into the cellular tissue. Having taken this precaution, you are gradually to throw up the injection, turn the stop-cock, so as to confine it in the tunica vaginalis, and move the scrotum from side to side, so that the fluid may reach every part of the surface. The fluid should be suffered to remain from about four to five minutes. While it remains in the tunica vaginalis, the patient will complain of a good deal of pain; he will first feel as if the testicle were squeezed; he will then feel the pain running along the course of the spermatic cord at the spinal process of the ilium, and at the loins where the spermatic plexus

of nerves arises, and lastly, at the neck of the bladder, in the course of the vas derens. The pain will be greater or less in proportion as the patient is more or less irritable. It is to be observed, however, that the degree of subsequent inflammation is generally in the inverse ratio of the pain suffered at the time of the injection. If a man lies tranquilly on the table, and tells you that he does not feel much pain, he will in general have a considerable degree of inflammation the next day. On the other hand, where much pain is felt, it is generally the effect of nervous irritability, and little inflammation follows it.

I have been under the necessity of bleeding and giving large quantities of opium to a patient in consequence of the severity of the pain produced by injection, and yet no inflammation was produced. You may say that this was in consequence of the bleeding; but this is not the case; the pain arises from irritation in the nervous, rather than the vascular system, and inflammation does not readily follow it. When you have suffered the fluid to remain five minutes, and withdrawn the instrument, you need not apply any thing to the part, but tell the patient to walk about as usual in the course of the day if he feels but little pain. If he should feel much pain, tell him to lie down, take his dinner that day, and his glass of wine after it, if he has been in the habit of doing so. After a few hours have elapsed, inflammation will probably come on.

Above all, tell your patient to come the next day, that you may see whether the inflammation, which is necessary for the cure of hydrocele, has been produced; if it has not, you must not despair of producing it. Take the part in your hand, and touch it here and there until the patient feels a good deal of uneasiness. Then desire him to take a long walk, and to take an additional quantity of wine after dinner. In this way you will generally succeed in producing such a degree of inflammation as will be sufficient to effect a cure.

It sometimes happens, however, in constitutions which have a great disposition to inflammation, that the injection will act so violently as to produce suppuration. When there is danger of this, which you may ascertain by the great pain and redness of the scrotum, make an incision with the lancet into the part, and discharge the contents, and if the opening be not large, the cure will be effected by the adhesive process. Do not suppose that the operation for hydrocele by injection, simple as it is, is altogether devoid of danger. There have been some instances in which death has followed, and many in which life has been endangered by it. Some gentlemen who now hear me have had opportunities of witnessing the practice of the hospitals for many years, and they must have seen many cases, in which extensive sloughing has been

produced, in consequence of injury caused by throwing the injection into the cellular tissue. I will tell you a case which happened shortly after I became surgeon at the other hospital. I injected the tunica vaginalis of a patient for hydrocele, but did not succeed in curing him, for he came back two years after with his hydrocele as large as ever. He was naturally enough disappointed with me for my want of success, and he chose to put himself under the care of Mr. Forster. Happening to cast my eye on the man, as I passed through the wards, I asked him what was the matter with him, and he said, "Why, sir, I have got hydrocele; the disease which you attempted to cure has returned." Some time after I did not observe the man in the ward, and upon asking what had become of him, I was told that he had gone out of the hospital; but as I was walking home over the bridge, the man who told me so, accosted me and said, "Sir, I beg your pardon for telling you a story, but the truth is, that man, about whom you asked, has, indeed gone out of the hospital, but I omitted to say, that he is dead." The truth is, that one of the dressers, who was a very steady young man, performed the operation of injection, and that an accident happened to him, which, unless great care be taken, might have happened to any body. He did not attend sufficiently to keeping the canula within the tunica vaginalis: the consequence was, that a portion of the fluid went into the cellular tissue. The man experienced excruciating pain, and the dresser immediately withdrew the canula, but very little of the fluid came out. Violent inflammation of the scrotum ensued, which went on to gangrene, and the patient died. Dr. Farmer recently met with a similar case, in which sloughing was brought on from the fluid being injected into the cellular tissue, and the result was destruction of life. Great care, therefore, should be taken to prevent the fluid from escaping by the side of the canula.

I shall conclude this lecture with a few observations on hydrocele of the spermatic cord. This disease may be defined as a collection of water in the spermatic cord, but it is necessary that you should know the situation in which the water is collected. The part at which hydrocele of the spermatic cord takes place is in the tunica vaginalis, between the testicle and the abdominal ring, sometimes extending above the ring, and on that account it is often mistaken for inguinal hernia. By pressing your finger along the parts until you have passed the abdominal ring, you may judge of the nature of the tumour by its blue and semi-transparent appearance, by its being entirely unattended with pain, and by its not running into the abdomen like inguinal hernia. The best mode of treating this disease is to make an incision in the tumour, for injection would, in this situation, be difficult and dangerous; to in-

troduce your finger into the sac, so as to ascertain that there is no communication with the abdomen, and then introduce a small quantity of flour to promote a slight internal irritation. In this manner the cure of hydrocele of the spermatic cord may be readily effected.

LECTURE XXV.

ON HERNIA.

We shall now proceed to the subject of hernia.—Hernia is a generic term, and is used to signify the protrusion of any viscus from a cavity, though surgeons generally confine it to protrusions of the viscera from the cavity of the abdomen. In children, who have a malformation of the bones of the head, you will sometimes see a projection of the brain through the skull, and this is termed hernia cerebri. I have also seen the lungs protruding between the ribs, through the intercostal spaces, though instances of this kind are very rare; I have met with two only. But protrusions of the viscera of the abdomen are of the most frequent occurrence; and this arises from the bulk of the parts contained in the abdomen, and the relaxation of its parietes. If you were asked, then, what hernia is, you would say, *a protrusion of any viscus from its natural cavity.*

DIFFERENT KINDS OF HERNIA.

There are four species of hernia more frequently met with than others, and which it behoves you, therefore, particularly to attend to; and here I may observe that hernia is, of all cases, the one that requires the most prompt treatment and skill. Aneurism and stone are complaints which give time to the patient and his friends to consult those who have had greater opportunities than others of observing the diseases under which they labour; but with respect to hernia—there is no time to get aid from distant places; on your information and nerve will the safety of the patient depend, and if you be ignorant of this disease, his life will be lost.—The four species of abdominal hernia are—1st. inguinal; 2d. femoral; 3d. umbilical; 4th. ventral.

Inguinal hernia, called sometimes spermatocele, takes the course of the spermatic cord; it varies a little in different cases, but generally follows this course.

Femoral hernia passes behind Poupart's ligament, on the inside of the femoral artery and vein, between these vessels and the os pubis.

Umbilical hernia takes the course of the umbilical cord, passing through the opening in the linea alba behind the umbilicus; this some-

times never closes, consequently, an opening remains through which the umbilical hernia protrudes.

By ventral hernia, I wish you to understand a protrusion of the intestines through the different lines of the abdomen, the linea alba (excepting at the umbilicus), lineæ semilunares and transversæ, which protrusion is called ventral, in contradistinction to the umbilical; but besides these four kinds of hernia, several others occasionally occur.

Sometimes there is a protrusion through the diaphragm, and this is called phrenic or diaphragmatic hernia; this hernia occurs in some cases between the œsophagus and aorta, now and then between the aorta and vena cava; but these cannot be relieved by any surgical treatment, as they are not situated within view, and are not known to have existed till they are ascertained upon dissection. You will also find a hernia at times between the vagina and rectum in females, called perineal hernia, and in males between the rectum and bladder, having the same name. There is also a hernia situated in the vagina, called vaginal hernia; you ascertain the nature of this by putting the finger into the vagina; when you feel a tumour, you desire the patient to lie down, and it is easily reduced; but it immediately returns when she resumes the erect position. Hernia sometimes takes place in the foramen ovale, a fine instance of which you have had an opportunity of seeing this season at the other hospital, where there were ulcerated sinuses, and the fæces discharged through them; so you may see a hernia now and then in the ischiatic notch. These different species of hernia are very rare when compared to inguinal hernia, therefore we shall rest little on them. Now, gentlemen, we shall show you the four different species of abdominal hernia, as they require different modes of operation, and therefore require to be correctly known.

INGUINAL HERNIA.

We shall mention first, that kind of inguinal hernia which takes the course of the spermatic cord; it begins with the cord just as it passes out of the abdomen, and follows the direction of the inguinal canal; its course is oblique, and on this account is called oblique inguinal hernia; it is readily distinguished from the next kind by its oblique course, which I shall mention to you. The second kind is the direct inguinal hernia; in this case, the hernia does not follow the course of the inguinal canal, but comes out directly through the external abdominal ring, and pushes before it the fascia transversalis; if there be any obliquity of the hernia, it will be towards the linea alba; thus you readily distinguish the one from the other; in the one case the hernia will be oblique, in the other directly forwards; should it be slightly

oblique, it will be inclined towards the navel; therefore, this kind of hernia is called direct inguinal hernia.

Well, then, there is the hernia in which the intestine protrudes into the tunica vaginalis, called the congenital hernia; the tunica vaginalis remains unclosed in some persons after birth, and then this hernia occurs; now you must not think that this hernia is only to be found in children, I have met with it in a person thirty years of age; I have known hernia of the tunica vaginalis take place only four days previous to an operation being performed for it, and this in a man of thirty years of age.

There is a hernia which is found in a cyst in the tunica vaginalis; the encysted hernia; the cyst is formed in a curious way; here is a specimen (pointing to one on the table) of this kind of hernia.

Well, then, gentlemen, if asked what are the different kinds of inguinal hernia, you would answer—first, the *oblique*, taking the course of the spermatic cord. Secondly, the *direct*, protruding directly out of the abdomen through the external abdominal ring. Thirdly, the *congenital hernia*, the hernia in contact with the testicle, or rather within the tunica vaginalis. Fourthly, the *encysted* hernia of the tunica vaginalis, formed within that coat.

Of inguinal hernia, the oblique is the most frequent and with respect to the others they are of less common occurrence.

OBLIQUE INGUINAL HERNIA.

As the hernia takes the course of the spermatic cord, it may not be amiss to recall to your minds the direction which the cord takes, though I trust there is not one present who is ignorant of it; if there should be, this kind of hernia will not be understood by him. The spermatic cord emerges, then, from the abdomen, midway between the spine of the ilium and pubes; and in this part it will be found just opposite to the iliac artery; a hernia protruding through the opening where the spermatic cord comes out, carries the peritoneum with it, and a covering of the fascia transversalis, and when you dissect it, instead of finding peritoneum, what do you meet with first? Why, the fascia transversalis, which surrounds the spermatic cord just as it passes from the abdomen; and as the cord takes its course through the inguinal canal, a covering is given off which descends on the cord itself. The inguinal canal begins at the point where the spermatic cord leaves the abdomen, and terminates at the lower abdominal ring; it is about two inches in length, and contains the cord; it is bounded anteriorly by the tendon of the external oblique, fibres of the internal oblique and transversalis muscles, and posteriorly by the fascia transversalis. The spermatic

cord descends then obliquely through this canal, and, just as it passes through the lower abdominal ring, it receives a covering from the edge of the external oblique, called the fascia of the cord.

Camper has published some excellent plates showing this fascia, and how much it is thickened in hernia: well, gentlemen, the spermatic cord will not make any difference to you in this hernia;' now let me just remind you that oblique inguinal hernia begins to protrude half way between the anterior superior spinous process of the ilium and the symphisis pubis; in the spot directly anterior to the iliac artery, about an inch and a half from the lower abdominal ring, opposite to the tendons of the internal oblique and transversalis muscles, where it will be important to bear in mind that stricture most frequently occurs: and not at the abdominal ring, as some surgeons have said; it is rare for it to be in this last place: in old hernia the seat of the stricture may be at this part; but ask all those who have operated much for hernia, where the seat of hernia is usually situated, and they will tell you, not at the abdominal ring, but where I have just mentioned, and that before you can reach the stricture you have to put your finger deep down, an inch or more.

Now, when the hernia has protruded through the fascia transversalis, how are the spermatic and epigastric arteries situated with respect to it? The epigastric artery is always on the inner side of the hernial sac; here is a specimen (pointing to one on the table), in which its course is distinctly shown; in the operation, then, there would be no danger in wounding this vessel, unless you cut inwards. Divide the stricture directly *upwards*, or upwards and outwards, and you will be quite safe from the epigastric artery.

How is the spermatic artery situated at the origin of the hernial sac? The hernia is above, and this vessel could only be wounded by cutting downwards; there is no danger, in operating for hernia, of wounding the spermatic artery, therefore banish it from your minds; the epigastric is the only one in danger, and that only if you cut inwards. After the hernia has protruded through the fascia transversalis, it is situated in the inguinal canal; the next place where it reaches is just under the arch formed by the tendon of the internal oblique and transversalis muscles; and here it receives a covering from the cremaster; above the sac then are the internal oblique and transversalis, and beneath it the fascia transversalis; well, after having passed through the inguinal canal, which may be two inches or from that to two and a half long, it reaches the lower abdominal ring; and at this part the hernial sac will have two coverings, one from the cremaster, and another called the fascia spermatica; in this specimen (exhibiting one to the class) you

see a hernia with all its coverings; with respect to the spermatic cord, it is behind the hernia, and the testicle below it; the internal oblique and transversalis above it, and the fascia transversalis beneath it.

Were you to dissect a hernia below the abdominal ring, you would find the fascia of the cord applied tightly over the hernial sac, which has the appearance of being the sac itself; there is a fibrous covering derived from the cremaster muscle; then cut through these and you see the hernial sac, having the character of peritoneum; you pinch it up with your fingers and divide it, when water immediately escapes. The epigastric artery is situated very close to the hernia, but a little to the pubic side. Well, it is generally thought that the hernial sac is an elongation of the peritoneum; but in the oblique inguinal hernia it is not an elongation, but only a real growth of that part. When you look at the lower part, you will often see a dark-coloured spot, having a blue appearance in the dead body; and this point is studded with numerous vessels, and in it the ulcerative process has commenced.

Some persons say, I mean speculative persons and those who have never observed, "Return the hernial sac into the cavity of the abdomen;" but how is it to be returned? do those persons think that it has no attachments? It is bound by firm adhesions, and cannot be returned except in an incipient state, unless by a painful and dangerous process of dissection, which it would not be justifiable to perform.

Hernia is subject to several varieties; 1st, it is subject to a variety in *size;* this necessarily happens from the difference of its course in different persons; here is a specimen (exhibiting one to the class), so small that it has not emerged from the abdominal ring, yet is as perfect as if it had been immediately below it. Here is another specimen (pointing to one on the table) which reached to the knee. The largest hernia I ever saw was in the person of Mr. Gibbon, the historian: combined with this was a large hydrocele, and in consequence of both complaints he was obliged to wear a peculiar dress.

It sometimes happens that there are hernia with the external covering so thin that you are enabled to see the peristaltic motion of the intestines; this is not unfrequently the case in large hernia. I have seen the lower orifice of the stomach pulled down to the abdominal ring.

Hernia varies as to its *contents;* at one time it contains intestines, at another omentum; and here let me observe that intestines will be generally found in the hernia of children, and that omentum is very rarely to be met with in the very young. I stated to you that there were several varieties, that the hernia sometimes enters the spermatic cord, and splits it into two parts; and that the spermatic artery and vein are before, and the vas deferens behind; here is a specimen, however, (holding it in the

hand) of the spermatic cord being split by a hernia, with the spermatic artery and vein on the outer, and vas deferens on the inner side; on this account, in large hernia, if the operation is performed, the opening is made in the upper and not the lower part; in large hernia a peculiar mode of operating is required. I have seen the bladder in a hernial sac; this happens in the oblique inguinal hernia more frequently than the direct.

Symptoms.—Now, gentlemen, I have given you the anatomy of inguinal hernia, I next come to the symptoms and diagnostic marks of this disease.

If you were asked how you would know a hernia, what answer would you give? Why hernia is to be known when it acts with the abdominal muscles, dilates and expands on coughing; 2dly, from its course, beginning from above and gradually descending; 3dly, when the person is placed in the recumbent posture the hernia returns; and then by these three means will you be assisted in detecting the hernia. Its reduction in the recumbent position is a striking mark of distinction, but not without exception; and besides, if it is a hernia, when the intestine goes into the abdomen there is a gurgling noise, from the air and fluid which it contains. When there is omentum in the sac, the sensation communicated to the finger is different; omentum is less easily distended, more solid. Some surgeons have said, "Oh! a hernia will be known to contain omentum by its doughy feel and want of elasticity;" this may be said in the closet, but will not do at the bedside of the patient. Here I must remark, that I have seen some of the best surgeons deceived in this point, and that when the contents of the hernial sac have been said to be intestine, they have been omentum: and when omentum they have been intestine; there is not a surgeon of any experience but will allow with me, that there is considerable difficulty in knowing whether there is omentum or intestine in the hernial sac. In operating for hernia, always do it under the impression that intestine is contained in the hernia, and not omentum, because you will be more on your guard; therefore make this an invariable rule.

Diagnosis.—In distinguishing hernia from some other complaints there is considerable difficulty.—1st, Hernia is sometimes likely to be confounded with *hydrocele:* an instance of this kind I mentioned to you in another lecture; in this case, had I introduced a trocar, I should have wounded the intestine, and destruction of life would have been the consequence. A gentleman very recently told me of a case where a hernia was mistaken for hydrocele, and the patient died in consequence, the intestine being wounded by the trocar that was introduced. The surgeon who told me this had none of those malevolent feelings which actuate too many of our profession; it was stated in such a manner

that it could be neither injurious to the individual who did it, nor to any other person; it is a circumstance that every one ought to deplore.

Another reason why you should be on your guard is, that both a hernia and hydrocele may be present at the same time; the hydrocele on the fore part, and the hernia behind. Much to the credit of two surgeons who operated where both hydrocele and hernia were present, they performed the operation safely; the one case fell under the care of Mr. Thomas Blizard, who is an excellent anatomist, but has lately relinquished his profession; of this I am exceedingly sorry, for I think that a man has two duties to perform, one to himself, and another to the public; and if a man has opportunities of acquiring information he should avail himself of them for the benefit of himself and mankind. I do not mean to censure Mr. Blizard—but I say it to guide others; and I cannot help thinking that it is wrong for one who possesses so much substantial information as Mr. Blizard, to withdraw himself from that sphere in which he might be so useful; he might lessen his labours, and render them less severe, but not give them up altogether. There is something in the experience which a surgeon acquires at the bed-side of the sick that is worth every thing else; you may be excellent anatomists and physiologists, but if you have not watched disease in the wards of the hospital, or at the bed-side of the patient, you will not understand your profession.

I have been led into this digression in consequence of Mr. Blizard's having withdrawn himself from the profession, a circumstance which I sincerely lament. Well, Mr. Blizard made an incision on the fore part of the tumour, and water was immediately discharged. This led him to think it was not hernia, and he desisted; but the symptoms of strangulated hernia still being present, he cut through the tunica vaginalis, in which the water had been contained, avoiding the spermatic cord, and behind he found the hernial sac: he dilated the stricture with a bistoury, and the patient did extremely well. The other case to which I alluded, where there was a hernia and hydrocele, occurred to Mr. H. Cline. After having evacuated the water, he dilated the stricture, and returned the parts; and, as far as I recollect, the case turned out well.

There is some little difficulty in distinguishing hydrocele of the spermatic cord from hernia; the two diseases are very likely to be confounded. The transparency of hydrocele, and its beginning at the lower part of the scrotum, are in general the characteristic marks of that complaint; but I mentioned to you before, that the hydrocele might be so large as to reach the abdominal ring, when it assumes the form and shape of hernia, and might be easily confounded with it.

There are two other diseases which hernia might be mistaken for; the first of these is *varicocele*—and what is varicocele? It is an enlargement of the spermatic veins; it begins above, and gradually descends into the scrotum: the swelling is of the form of hernia, and on the hand being applied when the patient coughs, it dilates considerably; and moreover, when the patient lies down it disappears; consequently this disease is very likely to be mistaken for hernia. Very recently I saw a case where a patient had been wearing a large spring truss for a varicocele that had been mistaken for hernia, and which had chafed him considerably. I tell you, gentlemen, how you shall distinguish it: Tell the patient to lie down; raise the testicles, and empty the veins; then press firmly on the abdominal ring; keep your finger firmly there, and raise the patient from the recumbent position, and the swelling will return; then in this easy way may you distinguish varicocele from hernia.

2dly.—The other disease that may be confounded with hernia is *hydrocele of the spermatic cord;* and in this complaint our diagnosis fails, when the hydrocele is situated above the abdominal ring. In the recumbent posture there is no appearance of it, but as soon as the patient rises it returns. It is situated above the ring, opposite to the tendons of the internal oblique and transversalis: pressure on this part might be of service.

The diagnosis of hydrocele of the spermatic cord below the ring is easy; above it is difficult. A truss, in this complaint, is not an evil, and may be worn with advantage.

LECTURE XXVI.

CAUSES OF HERNIA.

There are three causes of inguinal hernia; namely, unusual pressure of the abdominal viscera, pressure of the parietes of the abdomen, or relaxation of the parietes. Pressure from within, in consequence of enlargement of the abdominal viscera, the omentum and mesentery being loaded with a fatty substance, is a very common cause of inguinal hernia. It is well known that animals that are much pampered, and enjoy a great deal of rest and excessive indulgence, become the subjects of hernia. Women, in a state of pregnancy, are liable to hernia, though more frequently to umbilical than inguinal hernia. The intestines are forced by the uterus as it ascends from the pelvis to the upper part of the abdomen into a very small space, and in this manner protrusion sometimes takes place. The hernia is sometimes situated in the thigh, and sometimes in the groin; but it may be said

to arise less frequently from gestation than from other causes. Hernia is very commonly produced by the increased action of the abdominal muscles, in consequence of some effort disproportioned to the strength of the person using it. It is for this reason that we find hernia so much more frequently on the right than on the left side, because we generally prefer the right side in making any extraordinary exertion, and the effort made by the muscles is consequently in that direction. The proportion of hernias on the right to those on the left side is about sixty-five to thirty-five. Another frequent cause of hernia is relaxation. Persons advanced in years are often the subjects of hernia, in consequence of relaxation of body. At the time I was endeavouring to learn as many facts as possible connected with this subject, I examined most of the bodies brought to the dissecting-rooms in these hospitals, and found that a large proportion of old persons in this town, who were under the necessity of using bodily exertion, were subjects of hernia. It was in some cases necessary to examine these subjects with considerable care before the hernia could be detected; but upon minute examination, in the course of the inguinal canal or thigh, I found that old persons were very generally the subjects of inguinal or femoral, and sometimes of umbilical hernia. Persons who reside in the country, or who do not exert themselves in age, are much less subject to this complaint. It is said that in this town one person in nine is the subject of hernia; I do not think the proportion so large; but I should say that in this town, which is favourable to the production of the complaint, from the bad state of the atmosphere, and the relaxation of body produced by it, the proportion of persons affected with hernia is about one in fifteen. Heat may be also considered as a cause of hernia, from its producing relaxation of the abdominal parietes. Thus persons in warm climates, who use much exertion, are very subject to it. The people of France are much more frequently the subjects of hernia than the English. When I first entered the Hôtel-Dieu, at Paris, I saw a man carried up the staircase on a sort of bier which they use for the sick, with strangulated hernia; and I was afterwards informed that Desault had that day operated, at the Hôtel-Dieu, on another case of strangulated hernia. This circumstance might have been accidental; but the fact is, that hernia is much more common in France than in our own country. This may arise from the great activity of that people, and, in some degree, from the warmth of the climate. Persons recovering from fevers, who are much reduced in strength, are extremely liable to hernia from any increased bodily exertion, such as riding on horseback. Certain positions of the body dispose to the production of this complaint; such as the stooping position in lifting heavy weights from the

ground. If the person using such exertions is in a relaxed state of body, hernia is very often the result.

ON THE TREATMENT OF REDUCIBLE HERNIA.

With respect to the treatment of this complaint, gentlemen, it is only necessary to say, that a person who has a hernia, and does not wear a truss, is never for a moment safe. The danger of the hernia is greater in proportion to the smallness of its size. If the hernia be large, it is more readily returned into the abdomen: it is rarely strangulated; and if strangulated, it is more easily reducible. If the hernia be very small, the ring through which it passes being extremely narrow, the protruded parts are very tightly embraced, the hernia is very liable to strangulation, and in this state is rarely reducible. The danger of hernia is, therefore, in the inverse ratio to its size; and if a person should say to you, "I have got a small hernia, but I do not think it of any consequence," desire him to wear a truss; and tell him that the smaller his hernia the more necessary it is that he should wear one.

Various kinds of trusses, some of them very ingenious, have been invented at different periods; they may all, however, be reduced to four.

The common truss is a very good one, and is, perhaps, a little too much despised because it is old. This truss, in general, answers the purpose extremely well: it does not require an understrap; and it has this advantage, that it may be worn in the night as well as during the day. The mode of its application is, merely to place it on the side of the hernia, and bring it round the body; and if you use an understrap, this should be brought between the thighs. (The learned lecturer exhibited to the class the mode of applying this and the other species of trusses.) I do not know whether I may not have a little affection for this kind of truss; for, to say the truth, when I was about sixteen or seventeen years of age, upon hearing a lecture on hernia in this theatre, I discovered that I was myself the subject of that complaint. As soon as I felt satisfied of this fact, I could attend to no more of the lecture; but I went home, threw myself on the bed, kept my legs elevated against the bed-posts, and remained in that position till Mr. Cline returned. (*A laugh.*) I had requested to see him the moment he entered; and as soon as I saw him I told him that I had had a swelling for some time, which, after hearing the lecture that night, I was sure was a hernia. Mr. Cline laughed, gave me a common truss of this description, which I wore for three years; at the expiration of which time I had not the slightest appearance of hernia. I would not, however, leave the truss off, but I continued to wear it for two years longer, and from that time

up to the present moment, I have never had the least appearance of the complaint. The circumstance to which I allude may, perhaps, have given me a greater inclination to attend to this disease, and to investigate all the facts connected with it.

Of late years many improvements have been made in trusses. Here is a spring-truss (exhibiting it to the class), invented by Mr. Egg, which does not require any string, but is merely put round the body. This truss answers the purpose extremely well, and may be worn by night as well as by day.

A most ingenious truss, which has now come into general use, was invented some years ago by Mr. Salmon, a gentleman to whom the profession is indebted for many other ingenious inventions.

This truss, of which the principle is entirely new, is very easily applied, and may be very conveniently worn. One pad is placed upon the inguinal canal, on the side of the hernia, and the other pad on the base of the os sacrum. This truss is not liable to shift its place, and is now in very general use for incipient hernias, or hernias which are difficult to keep supported. There is, however, one objection to this truss, and that is, that it cannot be worn during the night, which is necessary to produce a cure of hernia. I am aware that some persons say, it is of no consequence whether the patient wear a truss or not, when he is in a recumbent posture, but I do not agree in this opinion. Unless a constant pressure be kept up on the inguinal canal, adhesion of the sides of the sac will not be produced. Besides, if the person cough in the night, or get out of bed to make water, the hernia is liable to descend, and if this should happen, though he may have worn the truss steadily for twelve months before, he must begin to date his cure from the last time at which the hernia descends.

For this reason I recommended the contrivance of a truss of this kind, which might be worn equally well night and day, and Mr. Ody, the successor of Mr. Salmon, has invented a truss of this description. (The learned lecturer exhibited one of Mr. Ody's trusses to the class.) This truss answers extremely well in all cases, except one. It sometimes happens that you meet with a hernia which you find it exceedingly difficult to support, and in which none of the varieties of spring trusses will succeed.

Some years ago, when I lived in the city, an elderly gentleman came to me with a hernia which could not be supported by any of the trusses commonly employed. It struck me that a man named Goldfinch had taken out a patent for a truss, which, as you see (the learned professor exhibited one of the trusses) is a simple leathern belt, with springs of

twisted wire. I sent for one of these trusses, and it succeeded completely in keeping in the abdomen a hernia for which every other truss had been tried unsuccessfully.

A person in Kent, who had himself taken out a patent for a truss, was the subject of hernia. He tried a great variety of trusses, but could not succeed in keeping his hernia in the abdomen. Mr. Edwards sent this person to me, and I advised him to try one of these trusses, which proved successful.

The contrivance and the mode of applying the truss are extremely simple. You place the pad on the hernia, pass the band round the abdomen, and fasten it on the pad; another pad goes round the inside of the thigh, and is fastened on the same pad. By this simple contrivance, the worst hernia, if reducible, may be supported.

You will be asked by the patient when you have applied the truss, how long he is to wear it; tell him to wear it at least two years. He will then ask you whether he is likely to be cured at the end of that time; your answer must be, that this will depend upon his age.

A young person is generally cured at the end of two years, but it will be advisable that he should continue to wear the truss for three years. If the person be not young, there is not much hope of effecting the cure of hernia by the wearing of a truss.

Even in these cases, however, a gradual diminution, and sometimes a reduction, of the hernia is effected by the wearing of a truss.

Mr. Gaitskell sent me an elderly patient with strangulated hernia, which was situated above the abdominal ring, and was extremely small. This patient told me that the hernia was formerly so large that it was in his purse, meaning it had descended into the scrotum: but that he had worn a truss for a number of years, and that it had become gradually reduced in size. This hernia was eventually reduced, though with great difficulty. In general, if the patient's age exceed forty years, I do not promise a cure by the wearing of a truss.

When a truss has been worn for some time, the effect upon the hernial sac is, that it falls into folds by the action of the cremaster, resembling the appearance of the stomach after death, when it has undergone contraction. Here is a specimen on the table, which will show you this effect of the truss upon the hernial sac. It sometimes happens, when a hernia is cured by the wearing of a truss, that water forms beneath the part at which adhesion takes place, producing hydrocele of a particular kind. The fluid in this case is clear, as water, and has not the common character of serum.

OF IRREDUCIBLE HERNIA.

Hernia becomes irreducible from various causes; the most common cause is, the adhesion of omentum or intestine to the interior of the hernial bag.

Here is a preparation, showing how completely a hernia is rendered irreducible by the adhesion of omentum to the interior of the sac. A second cause is the growth of omentum or mesentery, without adhesion, from the accumulation of adeps, which renders it impossible to return the hernia into the cavity of the abdomen. A third cause is the formation of a membranous band, produced by inflammation across the sac, by which the omentum and intestine become entangled, and the return of the protruded parts is prevented.

OF THE TREATMENT OF IRREDUCIBLE HERNIA.

With respect to the treatment of irreducible scrotal hernia, you must advise the patient to wear a simple suspensory bandage, without which he would be exposed to considerable danger, from the possibility of the hernia bursting, if he should receive a blow on the part. Mr. Norris had a patient whose hernia suddenly burst, in consequence of his striking his scrotum against a post, while he was walking in the streets of London. The hernia was returned, but the patient soon died. I knew a man with irreducible hernia, who met with a similar accident, in consequence of his falling from a ladder upon the edge of a pail. The omentum could not be returned into the cavity of the abdomen, and it was found, upon examination of the body after death, that the intestines were wounded.

A patient with irreducible hernia is always exposed to considerable danger from blows which he may receive. If the hernia burst, the intestine may be returned into the abdomen, but the omentum in general cannot be returned.

When a hernia is rendered irreducible by the growth of the mesentery or omentum, there is no doubt that a patient may be relieved by abstinence in diet, and by taking such means as are calculated to reduce the bulk. Few patients, however, can be induced to observe such a degree of abstinence as may lead to the absorption of a considerable quantity of adeps, but the effects which disease produces upon hernia, by reducing the bulk of the patient, prove that benefit would arise from adopting a plan of abstinence. A man, who had water in his chest, came to town in consequence of an irreducible hernia, which he found extremely troublesome. When I visited him, he told me that his hernia had never disturbed him until of late, when he had been troubled by a

severe cough. He had at this time swellings in the legs, and other symptoms of water on the chest. He became very much reduced by this disease, and the hernia which was previously irreducible became reducible, and was readily returned into the cavity of the abdomen, in consequence of the absorption of fatty matter in the omentum and mesentery, by the effects of his disease.

If the hernia is rendered irreducible, in consequence of the formation of a membranous band across the sac, you cannot depend upon any plan to effect its reduction. The long-continued application of cold will sometimes effect the reduction.

A gentleman in the profession, from Edinburgh, who was going out to a situation in India, after travelling all night in the mail to London, was unable to return his hernia into the abdomen. He was quite free from pain, and there was no gurgling noise indicating the presence of intestine. I told him, therefore, that I did not think it of much consequence, but that he should make pressure upon it by wearing a truss. He was unwilling, however, to go out to India with his hernia for a companion; under these circumstances I told him I did not exactly know what to recommend, but that I would advise him to place himself in a recumbent posture, and apply ice to the scrotum regularly every day; by this means a reduction of its bulk was at length, though very gradually, effected, so that the hernia could be returned into the abdomen.

In those cases in which the hernia is very large and irreducible, the best plan is to advise the patient to wear a laced suspensory bag, which, by its pressure on the scrotum, will not only prevent the hernia from increasing, but will diminish its size by absorption. In this manner a bulky hernia may be rendered much less inconvenient to the patient. This, gentlemen, is all I have to communicate to you on the subject of irreducible hernia.

With respect to wearing a truss in this state of hernia, if the patient should feel any pain, it will not be advisable. If a truss be worn in irreducible hernia, the spring should be very slight, so as to occasion no pain; otherwise there will be danger of strangulation.

STRANGULATED HERNIA.

I shall now proceed to consider the symptoms and treatment of strangulated hernia.

A hernia is said to be strangulated, when it is not only confined within the parts into which it has descended, but when it is so much compressed by the narrow part through which it has passed, that the circulation in the intestine or omentum which has descended is in a great degree stopped. Some portion of blood is still capable of being carried to the

part by the arteries, but it cannot be returned by the veins. It is a mistake to suppose that the hernia is merely incarcerated ; it is not only incarcerated, but it is so constringed by the narrow orifice through which it has passed, that the circulation in the intestine or omentum is in a great degree impeded.

With respect to the symptoms which accompany strangulated hernia, the patient first complains of pain about the region of the diaphragm. He will describe the sensation to be as if he felt a cord bound tightly round the upper part of the stomach. The next symptom is constant eructation, owing to the great quantity of air rising from the intestines to the stomach. The patient is next troubled with vomiting, accompanied with costiveness. He has a great disposition to have motions, but cannot succeed in his attempts to expel the fæces. There is some pain in the swelling, and a good deal at the part where the stricture is situated.

These symptoms attend the first dawn of strangulation. The abdomen afterwards becomes considerably distended with air, not at first from inflammation, but in consequence of the accumulation of flatus in the intestines. This is evident, because the patient does not at first complain of pain on pressure of the abdomen.

The vomiting becomes more frequent, and feculent matter is rejected from the stomach ; I am aware it has been said that this is impossible ; but really, gentlemen, one can hardly hear this fact denied, and preserve one's patience.

The contents of the intestines thrown up from the stomach have the common smell of fæces, and most of you are aware that the contents of the intestines do not acquire the smell peculiar to fæces until they have passed the valve of the ilium. The matter thrown up from the stomach has not only the solidity of fæces, but the smell peculiar to them ; and any man who denies that it is feculent matter, must really resist the evidence of his senses. The fact is, that as soon as a hernia becomes strangulated, inversion of the peristaltic motion of the intestines begins.

If any of you have not witnessed the peristaltic motion of the intestines, I advise you to get a rabbit, strike it on the back of the head, and immediately open its abdomen, in order to see the peristaltic motion of the intestines. No man ought to practise his profession without knowing accurately the nature of the peristaltic motion of the intestines.

Well, gentlemen, as soon as any portion of the intestines is strangulated, the anti-peristaltic motion begins ; the valve of the ilium is of no use, and the action of the intestines becomes retrograde. Hence, the patient loses the power of discharging the fæces, and they are thrown up in the action of vomiting. A clyster will sometimes bring away a

portion of feculent matter, but the quantity will be extremely small. During the time that the abdomen is in this tense state, but unaccompanied with pain, and while there is frequent vomiting of the fæces, the pulse is hard, frequent, and very distinct; but in the next stage of symptoms, when the abdomen is not only tense but painful to the touch, you will find the pulse extremely small and frequent; so small that it can scarcely be felt; so frequent that it can hardly be counted. The vomiting and eructations continue, and the patient is pale, and covered with a cold perspiration. The tumour becomes very tense, hard, and in general a little inflamed, on the surface of the skin.

A person unaccustomed to observe the symptoms of strangulated hernia, when he felt the pulse of the patient, and perceived symptoms of peritoneal inflammation, in the tenderness of the abdomen upon pressure, would say, that blood ought not to be taken in such a case, and that if it were, the patient would be destroyed.

Gentlemen, the reverse of this is the truth; you must not be deterred by these symptoms by taking away blood in considerable quantities. The strength of the patient's pulse will be increased instead of being diminished by this course, and in proportion as he is young and athletic, a larger quantity of blood must be taken away.

The next change in the symptoms of strangulated hernia is, that in addition to the vomiting, which is not less frequent, hiccough supervenes.

Hiccough was formerly considered to be a sign of the presence of gangrene, but it is now known not to be so. Patients have had hiccough for many hours, and have recovered after the operation for strangulated hernia. After the appearance of hiccough, you may prevent gangrene by bleeding, and using other means for reducing the patient. The hiccough will sometimes remain for several days after the operation, and, in this case, bleeding will relieve the patient more than any thing else.

When gangrene has actually taken place, the patient will tell you that he has got rid of all his pain, and that he feels a great deal better; but if you put your hand on his abdomen you will find it still tense and tender; his pulse will be intermitting, small, and irregular, and the swelling will feel tense and somewhat emphysematous.

In this state it sometimes happens that the hernia, by a little pressure may be returned into the abdomen, in consequence of the great relaxation of the surrounding parts from the effects of gangrene. Death, however, is close at hand.

I saw a man in this state at the other hospital, who declared that he was a great deal better, and begged to have a little small beer. I desired

the sister to give him some, and while he was in the act of elevating himself in bed to drink it, he fell back and expired. Be upon your guard, therefore, against encouraging the friends of a patient under such circumstances. Many a professional man has injured his reputation by holding out hopes of recovery from these delusive appearances, when in fact death is on the very point of closing the sufferings of the patient.

LECTURE XXVII.

APPEARANCES ON DISSECTION FOR HERNIA.

UPON dissecting a person who has died of strangulated hernia, you will find a considerable effusion of lymph in the cellular tissue in the neighbourhood of the hernial sac; and if gangrene had taken place, the parts will be found emphysematous; and wherever you press with the finger the impression will remain, that is, that part will pit. When you open the hernial sac, there will immediately escape a considerable quantity of serum; however, I ought to state, that the quantity of this fluid depends upon the nature of the hernia; the principle is this:—if it be an omental hernia, there will be but little—if it be intestinal hernia, then a considerable portion will be present. The omentum undergoes a considerable change in its colour, being much darker than natural, owing to its vessels being filled by coagulated blood—it will likewise have an offensive smell, and if gangrenous, the smell will be highly putrefactive—its texture also becomes very much altered, not being so solid as before death, having a crackling feel, as if it contained water or air, and easily breaking by the employment of the slightest force. Behind the omentum will be seen the intestine (if both are in the sac), having upon its surface a peel of adhesive matter; therefore, before you touch the intestine, you come to a layer of adhesive matter, with the nature of which you must all of you by this time be well acquainted—this adhesive matter; glues together such portions of the intestine as happen to lie in contact. The intestine will be found of a very dark colour, if it be not gangrenous, for that is not the character of gangrene, and when you are operating for strangulated hernia, if you should find the intestine as dark as red wine, still you would be justified in returning it into the abdomen, for when it is gangrenous, its appearance is very different, having upon its surface a number of green spots—not green at every part, but green spots interspersed here and there over the whole surface.

Persons, therefore, acquainted with the diagnosis of this disease look for *small green spots*, which readily yield and give way to pressure by

the finger. The very dark intestine is not in a gangrenous state, but in a different condition. In common inflammation of an intestine, then, its appearance is florid—but not so in inflammation of a strangulated intestine contained in a hernial sac; here it is rendered exceedingly dark, owing to the interruption of the return of blood occasioned by the stricture. The general character of parts in a gangrenous state is, their being inelastic, and readily yielding to pressure. Well, then, continuing the examination—as soon as you cut into the cavity of the abdomen there will burst forth a considerable quantity of gas, and the intestines within the abdomen, wherever they are found in contact, will be seen having upon them a red line, which red line will only be perceptible in those situations where the different convolutions touch each other; such, then, are the appearances discovered upon dissection of those who die of strangulated hernia. The next circumstance to look for is the seat of stricture; this is sometimes found at the abdominal ring, but not generally, except in old hernia.

It is quite an erroneous opinion to suppose that the stricture is usually situated at the ring; even the apprentices of these hospitals can tell you the contrary, and certainly it is not situated there in one case out of five, excepting, as I before remarked, in very large and old herniæ. Those surgeons, therefore, who believe that the stricture in strangulated hernia is situated at the abdominal ring are quite unequal in point of surgical knowledge to the performance of this operation.

Far be it from me to ransack the graves of those who have been destroyed by surgeons, who suppose that the abdominal ring is the only situation at which stricture occurs. He, therefore, who goes to the operation with a belief that he shall find the stricture at the ring, and that it is not to be found at any other situation, is most lamentably ignorant of the true nature of this disease. In large old herniæ, the stricture certainly generally happens at the abdominal ring; but in recent herniæ, and those of a smaller size, it usually occurs above it, as I shall presently explain to you.

Well, then, where is the stricture commonly situated in strangulated inguinal hernia? Why, I will tell you, gentlemen, opposite the tendon of the transversalis muscle, which circumstance is often produced in consequence of the thickening of the hernial sac, from the pressure of a truss. Sometimes the stricture is an inch above the abdominal ring; at others, when the hernia is very large, at the ring. But when the hernia is very small, the stricture is often two inches above the ring. And it is owing to this circumstance, that the finger is often lost in oblique inguinal hernia before the stricture can be felt, so far above the ring is it situated. Sometimes the finger feels the stricture an inch

above the ring, at others an inch and a half, or even two inches—and in each of these situations it is very common. The third place in which the stricture is found is at the neck of the hernial sac, in consequence of a membranous band crossing it at that part.

The following case will illustrate this most clearly; a man was admitted into this hospital having strangulated hernia; after the ordinary means for reducing it had been used without success, it was determined to perform the operation; the finger, after the first division of the supposed stricture, could be freely admitted within the ring, yet the intestines could not be returned into the abdomen; the opening was enlarged, and the finger again introduced, the intestine was again attempted to be returned, and the surgeon, after some difficulty, succeeded in forcing it out of sight; as it was no longer to be seen, he in all probability, thought it out of jeopardy, and the patient was sent to his bed. The following day, when the dresser went to see this man, he found a portion of intestines protruding; this was allowed to remain—it soon began to slough, which, day after day, continued to increase until he died. Upon examination, it was found that there was a membranous band crossing the neck of the hernial sac—the surgeon, therefore, in attempting to return the intestine, had doubled it over this band, consequently the cause of strangulation was never removed; here (holding up a preparation), gentlemen, you have an opportunity of observing the sac and band of which I have just been speaking; and you now see the intestine still in a strangulated state. It is not, therefore, sufficient to divide the stricture; but before the operation can be complete, you must be satisfied that the cause of strangulation is likewise removed, and that the intestine has been decidedly returned within the cavity of the abdomen.

Another cause of strangulation, gentlemen, arises from a portion of intestine being occasionally entangled in a part of the omentum. I saw a case of this kind in a patient under the care of Mr. Pew, of Fenchurch-street; after having divided the stricture, I was obliged, as it were, to unravel the intestine from the omentum, and even tore through a part of the omentum, before I was enabled to remove the cause of strangulation.

There are *four* situations in which the *stricture* is to be met with: at the abdominal ring in large and old hernia; in ordinary cases, an inch and a half or two inches above the abdominal ring, according to the size of the hernia; the stricture is sometimes, but rarely, occasioned by a membranous band across the sac; or by a portion of omentum becoming entangled with the intestine. Knowing these facts, you will be able to contend with whatever appearances you may meet with in cases for which you are required to operate.

You will be asked, gentlemen, what is the cause of strangulation in intestinal hernia? It will not be a sufficient answer to say, that a portion of intestine has descended into the sac; because it often happens that strangulation is produced, although only a single convolution has descended, and this convolution being elongated, does not occupy any additional space in the mouth of the hernia. The fact is that the additional portion of intestine, though it consist only of a single volume, brings down with it a portion of mesentery, which added to the piece of intestine previously descended, so completely occupies the space of the opening as to produce the symptoms of strangulation. This is the reason why hernia often becomes strangulated in consequence of very slight efforts; in lifting a weight a small portion of intestine may descend, and this bringing with it a portion of mesentery, produces strangulation. In omental hernia you will readily understand how strangulation is produced, because any portion of omentum which descends must occupy an additional space.

OF THE TREATMENT OF STRANGULATED HERNIA.

When a person has strangulated hernia he has no hope of safety, but in returning the intestine into the cavity of the abdomen; this, therefore, must be your first object, except in one or two cases, which I shall hereafter have occasion to mention. In order to effect this object of returning the hernia into the cavity of the abdomen, you are to employ what is called the *taxis*.

The taxis is a particular kind of pressure on the hernia, which is to be performed in the following manner:—You are to embrace the lower part of the hernia with your hand, elevate it gently, and push it towards the abdominal ring; having done this with one hand, you are to put the finger and thumb, of the other on the part just above the abdominal ring, and knead it gently by a successive motion of the finger and thumb, until you at last obtain a passage for a small portion of intestine or omentum through the strictured part into the abdomen.

When, by this process, you have gradually insinuated a small portion of intestine into the abdomen, it generally happens that the rest will follow, and the hernia will consequently be returned. It is of no use to make pressure on the hernia, with a view of emptying the intestines of their contents. This is an erroneous principle, for the contents of the intestines are very rarely the cause of stricture. It does, indeed, now and then happen that an indigestible mass occupies the orifice by which the hernia descends; but in general nothing will be gained by pressure on the swelling, with a view of emptying the intestines of their contents.

The time in which a hernia is returned by the process of the taxis is generally from ten to fifteen minutes. Do not attempt to perform it at once; proceed gently and gradually, and never press with any considerable force on the lower part of the swelling. Pressure at the orifice will not endanger the parts, but if you press with any force on the lower part of the swelling, you will run the risk of bursting the intestine. Sometimes, indeed, we find the parts in such a state as to render the operation unavailing, as where the intestines have given way, and feculent matter has descended into the hernial sac. Be upon your guard, therefore, not to employ so much force as to endanger the bursting of the intestine. It too often happens in our hospitals that patients are lost in consequence of gentlemen being suffered to make repeated trials of the taxis. It would be a good rule, and I wish it were adopted in our hospitals, if the taxis were only to be used once for a quarter of an hour, and not repeated until other means were employed. The repetition of the taxis is not only useless at the time, but often renders all other means for returning the hernia, which may be subsequently employed, unavailing.

It now and then happens, that a person is so extremely sensitive, and resists the employment of the taxis with so much violence, that it will be impossible to persevere, for a time at least, in its use.

Mr. Croft, the surgeon, called upon me when I lived in the city, and requested me to see a patient of his with strangulated hernia. I went with him immediately, and while we were walking to the patient's house, Mr. Croft said, "I do not think you will be able to return this man's hernia." I smiled, and said, "Why not?" Mr. Croft stated, that the parts about the abdomen were so exquisitely tender, that he had found it impossible to use the taxis. In fact, when I arrived, I found the patient's abdomen exceedingly tense, and he roared out so violently, and resisted me so much when I attempted to employ the taxis, that I found it impossible to persevere. Under these circumstances, I desired some *ice* to be applied, with a view of diminishing the sensibility of the part and facilitating the employment of the taxis. I called again in the evening, but was told that it was not necessary to go up stairs, for the hernia had returned of itself. In cases, therefore, where the patient suffers excruciating pain, do not employ the taxis immediately, but advise the application of ice, which will reduce the irritability of the part, and perhaps render its employment unnecessary. Mr. Newington had a patient with strangulated hernia, which returned by the application of cold water.

If you are called to a case of strangulated hernia, and find that the taxis does not succeed in reducing it, I advise you directly to *take away*

blood. The quantity of blood must be proportioned to the age of the patient; if he be young and athletic, a considerable quantity should be taken away; if he be extremely old, you should hesitate in taking away much blood; but if he be of the middle age, and not infirm, you should bleed freely. This course is to be taken not merely with a view of reducing the hernia, but to prevent peritoneal inflammation after the operation, if the operation should be necessary.

It is a most mistaken view of the nature of this disease to suppose that the patient is safe after the hernia is returned by the operation; on the contrary, he is in the greatest danger after the operation unless he has been freely bled before it. If you should be asked to what extent you would bleed in strangulated hernia, your answer should be, until it produces faintness, because it is in that state that the hernia is most likely to be returned. If you carry the bleeding short of this state of faintness, you may as well not bleed at all. If, therefore, the patient be strong, and in the middle period of life, you should make him stand up before you, and bleed him from a large orifice, until he complains that he shall not be able to stand unless you support him. At this moment the taxis will be most likely to succeed in reducing the hernia: and peritoneal inflammation after the reduction will at the same time be prevented. If a surgeon, therefore, does not take away blood freely under such circumstances, his conduct will be most unpardonable.

The next mode of treatment pursued in the hospitals, where it can be most conveniently employed, is to put the patient into a *warm bath.* The usual course is to put him into a bath heated to from 90 to 100 deg., for a quarter of an hour, and after his body has been well washed and cleansed, it is supposed that his hernia will be more easily returned. But what is the use of such a plan of treatment? by what principle are they who recommend it guided? It may soothe and tranquillize the patient for the moment, but no effectual benefit can result from putting the patient into a warm bath, unless you keep him in it until fainting is produced. In this state you will support the patient by putting your hand behind his head; and while the abdominal muscles are relaxed, you may employ the taxis with success. It will be better to do this while the patient is in the bath, or at all events, if he is taken out of the bath, you should take care to cover him with blankets, so that the faintness may not be removed; you will hear persons say that this remedy is of no use; it is of no use unless fainting be produced, for without this effect it ought not to be employed.

But surgeons make use of opposite plans of treatment: *cold,* for instance, and with considerable success and advantage, not by reducing

the volume of air, as has been absurdly stated; for first, it has not the effect of doing this; and secondly, if it had, it would be of no service.

The diminution of the volume of air will do no good whilst the pressure remains the same; cold operates beneficially in two ways: 1st, by astringing the scrotum, and diminishing its bulk, by which means it presses against the hernia, and facilitates the return. 2dly. It appears to have a sympathetic effect in lessening and retarding the inflammation of the intestines: soon after the cold is applied, there is a diminution of pain, and it saves the patient from the danger of active inflammation; cold then is of considerable use when delay is wanted; it now and then happens that you would like to have a surgeon at your elbow in operating for hernia, though you might be quite equal to the task, to sanction your proceedings; as for the fate, heaven alone knows, for it is extremely uncertain.

Apply cold then in cases where, during the interim, you wish to have time to consult; as it delays, at least, the return of inflammation. I have seen persons brought into the surgery of this hospital when the snow has been on the ground, and they have been placed flat on a board, and snow or ice has been applied; immediately they have become easy, and in a short time the hernia returned; therefore, the application of ice is useful in two points of view. It happens, however, that ice cannot always be procured; particularly in the country, and the substances which you will use as substitutes are the nitrate of potash, and muriate of ammonia; these are to be mixed together, and about a table-spoonful is to be put into a pint of water; this will produce a degree of cold equal to 26 deg. Fahr., six degrees below the freezing point; if you breathe on a vessel containing thin mixture, the halitus will be converted to ice; a greater degree of cold than this even might be obtained by the addition of more nitrate of potash and sal ammoniac; as low as 20 deg. Fahr., twelve degrees below the freezing point; the only objection to this is, that it does not retain its cold, but requires to be often repeated. Linen, wetted with this mixture, spread over a part, produces a considerable degree of cold. When ice is employed, it should be put into a bladder, and broken into small pieces; it should be half filled, and the part completely enveloped in it; if it is put into linen, there is a danger of some escaping, and destroying the life of the parts on which it goes. A case of this kind once happened in this hospital.

Another means that has been used, and the most successful of all is the *tobacco enema;* it is the most powerful agent we possess; take one drachm of the tobacco, and add a pint of boiling water, let the infusion

remain about a quarter of an hour, and then strain; use only half at once to begin with, for though some persons might bear the whole and even more, yet there are others who cannot bear the least thing. The effect of this remedy is to quicken the pulse, and also make it small; the skin becomes cold and pallid, and there is extreme relaxation of the muscles.

A case of umbilical hernia that I saw, with a surgeon in the neighbourhood of London, was diminished under the use of the tobacco enema, and, on the application of the hand, it was easily returned, though it had previously resisted the taxis. The effect of the tobacco enema in hernia depends much upon whether the hernia is situated near muscle or tendon; if it is surrounded by the former the effect will be considerable and instantaneous.

In femoral hernia, which is covered before by a strong fascia, and where there is a strong bone resting against it posteriorly, the tobacco has not the same effect as in umbilical or inguinal hernia; in umbilical hernia its action is most considerable: in inguinal next.

What I would do if I had strangulated hernia would be this: I would have the taxis employed steadily for ten or fifteen minutes: if this did not succeed, I would be bled to syncope, and then have the reduction by the hand attempted again; if this also proved unsuccessful, I would have the tobacco injection, and wait a short time; and then, if necessary, have the operation performed; it is the most egregious ignorance possible to delay the operation so long as is often done, thereby wasting those precious moments which, if properly used, might have been spent in saving the life of the patient; ask those about our hospitals, who are the persons who die from strangulated hernia? and they will tell you those who have the operation delayed three or four days, and are not brought to the hospital till three days after the hernia has been strangulated, and then, if operated on, they often die: the delay is the cause of the danger, and not the operation. I have had a little personal experience of this complaint, and have devoted no small share of my attention to it, and I would not wait more than twelve hours, if the tobacco enema and other means had been employed.

Now let me allude to the case of a late illustrious nobleman—I am almost afraid now to mention names—who died of this disease; he was in the country, and during his stay there, had strangulated hernia; he was attended by a person of strong mind, and who had studied his profession with industry; he offered to perform the operation, but it was delayed, on the ground that London skill and advice should be obtained; but before this could be had, the nobleman died: I do not mean to under-value London skill, but it certainly is great folly to delay in this

complaint. I would propose the operation, and perform it readily if it was agreed to; but if not, I would wash my hands of the affair, and be freed from the consequences.

LECTURE XXVIII.

DIRECT INGUINAL HERNIA.

Our principal object, in this evening's lecture, will be to describe to you the operation for strangulated inguinal hernia, and to show you, on the dead subject, the manner of performing that operation. Before I state to you, however, the best method of performing this operation, I will say a few words on the subject of direct inguinal hernia, or that which protrudes directly out of the abdomen through the external abdominal ring. It was formerly supposed that this was always the course which inguinal hernia took; it is scarcely necessary to tell you, that this opinion is quite erroneous; but it does occasionally happen that hernia takes place in the direction in which it was formerly supposed constantly to occur. Direct inguinal hernia begins on the inner side of the epigastric artery, between it and the pubes. Direct inguinal hernia does not take the course of the inguinal canal, but it passes through the lower part to the abdominal ring. The length of this hernia is not more than an inch at the utmost behind the abdominal ring; in general, it is not more than three quarters of an inch behind it. It proceeds through the abdominal ring, and is received into the scrotum, where it has three coverings instead of two, as in the case of oblique inguinal hernia.

I have already stated to you, that in the latter it receives a covering from the external oblique, namely, the aponeurosis or fascia of the cord, and another covering from the cremaster, both of them of considerable density, and thicker than the hernial sac itself. Direct inguinal hernia passes on the inner side of the epigastric artery, and directly as it emerges from the ring is received under the fascia of the cord, which forms one covering; the cremaster passes over obliquely, so that the whole surface is not covered by it. Besides these coverings, it has one of its own, which is properly the covering of the hernia, half of which is formed by the tendon of the transversalis, and the other half by the fascia transversalis. This forms a complete tendinous pouch, in which the hernia is contained, as may be seen in a beautiful preparation on the table.

If you are asked, therefore, in what respect direct inguinal hernia differs from oblique, you will answer, that the latter emerges from the

abdomen, midway between the spine of the ilium and the pubes, whereas the former emerges directly behind the abdominal ring. One takes the course of the spermatic cord, and the other passes directly through the abdominal ring, from behind; one is covered by the fascia of the cord and the cremaster, the other has an additional covering, derived from the tendon of the transversalis and its fascia. It may be said that I am entering very minutely into details of the structure of the parts; but in this disease, gentlemen, your knowledge of the anatomy of the parts cannot be too minute, and unless you are thoroughly acquainted with it, you had better never attempt to operate in hernia at all. This is not a disease in which a man imperfectly acquainted with the anatomy of the parts will be able to operate; if his knowledge of their structure be not most accurate and minute, he will not be able to overcome the difficulties with which he may have to contend. Some gentlemen who now hear me may have witnessed the embarrassments of surgeons, who have come to the operation for strangulated hernia without a sufficient knowledge of anatomy. A surgeon unacquainted with the facts to which I have just drawn your attention, will make his incision upon the hernia, and as soon as he sees the fascia of the cord he will make a little cut, dividing a few fibres, under which he will put a director, and proceed to make a slit upwards. Instead, however, of coming to the hernial sac, as he expected, he will find something else to divide; and in this state of embarrassment he will probably turn round for assistance, and ask what he should next do. Such a man, gentlemen, ought never to enter the operating theatre: no man should attempt to perform an operation, if he is obliged to apply to others for assistance. Well, he will divide this covering; and still, not coming to the hernial sac, he will probably express his surprise at finding the hernia so completely buried. Gentlemen, if a surgeon is acquainted with the anatomy of the parts, he knows that there are, of necessity, two layers to divide before he comes to the hernial sac; and that in direct inguinal hernia there is, besides the coverings formed by the aponeurosis or fascia of the cord and the cremaster, a third covering, like the peritoneal bag, composed of the tendon of the transversalis and its fascia. There is a preparation on the table which will give you an opportunity of seeing the epigastric artery close to the mouth of the direct inguinal hernia, on the outer side. This species of hernia was first observed by Mr. Cline, senior, in the year 1777, on opening the body of a person who had been a patient of Mr. Hawkes, of Chelsea. He was surprised to find the hernia on the inner side of the epigastric artery, and he was in the habit of mentioning this case in his lectures. This circumstance led others to observe this spe-

cies of hernia, and it is now well known to occur occasionally. I cannot state exactly the proportion of cases of oblique to those of direct inguinal hernia. There is at this time, in the other hospital, a patient with fracture of the thigh-bone, who has also direct inguinal hernia.

You will be asked how you distinguish direct from oblique inguinal hernia; your answer should be, that they are distinguished by the two following circumstances:—In the *first* place, tracing the spermatic cord, you will find that in direct inguinal hernia, the hernia is behind the spermatic cord, whereas in oblique inguinal hernia the spermatic cord is behind the hernia. *Secondly*, when you trace the mouth of the hernial sac, in oblique hernia, you find it above the abdominal ring, towards the spine of the ilium; whereas in direct hernia there is rather an inclination inwards, towards the umbilicus, so that it passes in a direction from without towards the pubes; from above downwards, with a slight obliquity outwards. These are two points which can only be distinguished by those who have frequently observed the disease in the living subject, and who have also had frequent opportunities of examining, in the dissecting-room, the bodies of those who have died under the disease. Bearing these points in your minds, you will be able to form correct general principles by which you may be guided in performing the operation for strangulated inguinal hernia.

The cause of direct inguinal hernia is generally some great exertion of the lower part of the abdominal muscles. It happens most frequently in patients who are the subjects of stricture. The greatest number of herniæ I have ever seen in one patient amounted to five. This man, who had a very bad stricture, had three herniæ on one side, and two on the other; one on the inner side of the epigastric artery, one on the inner side of the umbilical, two on the opposite side of the epigastric, and another on the opposite side of the umbilical artery. This species of hernia arises more frequently from the efforts made to expel the urine in cases of stricture, than from any other cause. Direct hernia may be truly called a rupture; whenever a tear of the parts takes place, direct, and not oblique inguinal hernia is produced: I have never seen an oblique hernia produced by a blow on the abdomen. When the direct hernia is reducible, you should apply the truss not so as to press upon the pubes, for this will give pain, but upon the parts a little above the abdominal ring. You should not press upon the whole of the inguinal canal, as in the case of oblique hernia; but the truss should be so applied as to make its pressure bear towards the centre of the abdominal ring. When a direct inguinal hernia is strangulated, the patient is often in great danger, though it appears to be reduced, as the intestine may still be strangulated within the hernia. An out-patient at the

other hospital came to the surgery with strangulated hernia, and a gentleman supposed he had succeeded in returning it, as he had pushed it through the abdominal ring. As the man, however, still complained of pain, he was admitted into the hospital. The symptoms were not relieved; no stools could be procured, and in three or four days he died. On examination of the body after death, it was found that the hernia had passed through the abdominal ring, but the stricture was still remaining upon it; so that the hernia was strangulated behind the abdominal ring.

OPERATION FOR STRANGULATED HERNIA.

Before I describe to you the operation for strangulated hernia, let me make one or two observations: first, perform the operation before there is any peritoneal tenderness: there will be always tension of the abdomen from inflation of the intestines, as I mentioned to you before; but tenderness from peritoneal inflammation, if present when the operation is performed, renders the issue doubtful; because, though the division of the stricture liberates the parts which are pressed, yet it does not retard peritoneal inflammation; therefore make it a rule to operate before any symptom of it appears. Secondly, you may wait a longer time in old persons before you perform the operation, than in the young or middle-aged. In a boy, for instance, you should wait but a very short time after you have used the other means; in an older person you may stop longer, because the parts are generally more relaxed. Having used the means which I recommended to be adopted, without success, you will then proceed to the operation. The patient should be placed on a table from two to three feet high, with the legs hanging over the end; the hair having been previously removed from the pubes, so as to prevent any getting into the wound, you should commence the incision from the upper part of the tumour, in whatever situation it may be, and carry it along its middle to the lower part; there will be no necessity to continue the incision quite to the lower part, if the hernia be large, as then it often happens that there are vessels crossing in that part. By the first incision you lay bare the fascia of the cord, and in doing this you will divide a small artery, the external pudendal, which crosses directly opposite to the abdominal ring; some will then say to the assistant, "Press on the artery till the operation is over;" but the instant the finger is removed, a jet of blood issues forth, and obscures the part which you are so anxious to see distinctly. The better plan is, to take a tenaculum, and secure the two ends of the artery, by which means you will be able to have a good view of the different parts during the remainder of the operation.

Having secured the vessel, you scratch through the fascia of the cord, just below the ring, with considerable care, separating it from the cremaster muscle; a small opening being made, you introduce a director upwards to the abdominal ring, and inferiorly to the lower part of the swelling, and divide the fascia more or less, as may be required; the next parts that will be brought into view are the fibres of the cremaster muscle, passing obliquely from above downwards; this covering is of considerable density, and must be opened with care; a director is to be introduced under it, in the same way as the fascia of the cord, and then it is to be divided; as soon as this is done the hernial sac becomes exposed; it is of a blue appearance, and semi-transparent, from the fluid it contains; so the character of the sac is quite different from that of the coverings, and the one may be easily distinguished from the other. Having laid bare the sac, you pinch it between your fingers, and feel distinctly the intestine and omentum within it; in rubbing the hernial sac between the fingers do not use any force, as this is exceedingly dangerous; well, when you have raised the sac so as to separate it from its contents, take the knife and make a small cut into it, not downwards, but in a lateral direction; place the instrument horizontally, so as to avoid the danger of wounding the intestine, a danger to which you would be exposed if you cut downwards. As soon as an opening is made, water generally escapes, if intestine be included in the sac, and there are no adhesions. Having opened the hernial sac, a director is to be introduced as far as the abdominal ring, and then it is to be divided up to that extent; the director is then to be carried to the lower part of the sac in the same way. When both omentum and intestine are in the sac, the omentum will be found before, and the intestine behind; there will also be a small portion of omentum at the upper part. After having opened the hernial sac, the great difficulty commences; you are next to feel for the stricture; put your finger (and the little one is best for the purpose) into the hernial sac, and ascertain if the stricture is situated in the abdominal ring; and if it is, what you have to do is, to spread the omentum on the fore part of the intestine, like an apron, so as to cover it entirely; by this plan the intestine is less liable to be wounded, and it adds exceedingly to the security of the patient; and then you pass a probe-pointed bistoury, guided on the finger, and divide the stricture, not very freely, but to a small extent; a slight motion of the knife will do it. But the stricture is seldom situated at the abdominal ring. I recollect asking one of our apprentices, last year, how many times he had seen the stricture at the abdominal ring, and he told me never. My experience does not exactly coincide with this; but I believe the stricture is never situated in that part but in old and large

herniæ; and if a man sits down to the operation, under the supposition that it is there, he will be likely to destroy the life of the patient: I will tell you what he would do, he would pass the instrument on the finger up to the abdominal ring, and divide it; then he would endeavour to push the intestine into the abdomen, but it would return as often as the attempt was made; and not conceiving the stricture at any other part, his attempts would be repeated, and the force employed would most probably rupture the intestine. No, gentlemen, the stricture is usually situated at the upper part of the hernia, just opposite to the tendon of the transversalis muscle, or else in the hernial sac itself; and what you have to do is, to slit up the abdominal ring, to hook up the abdominal muscles, and draw them upwards towards the abdomen; then to pull down the hernial sac; by this means you expose the stricture, and render the operation more safe to the patient. The plan that used to be adopted was, to introduce the finger high up into the hernial sac, with the knife on it, and thus divide the stricture; but in this way the danger is increased, as the parts are concealed from view. The probe-pointed bistoury is blunt to the extent of a quarter of an inch, sharp for half an inch, and then blunt again, so that you introduce it on a director or finger, and divide the stricture without fear of cutting too much. The stricture being divided, you next return the intestine; the intestine is to be returned before the omentum. You should always at this stage introduce a finger, to see whether the parts be freely returned or not, and are not compressed at the place where the stricture was situated; another advice that I will give you is, if there be any air in the intestines projecting above the stricture, bring it down to the lower part, and by this means they will be more easily returned. The intestines should be returned piece-meal to the cavity of the abdomen, and then the omentum should succeed it. But there is one point that I have not spoken of, on which I will say a few words: the direction in which you are to divide the stricture so as to avoid the epigastric artery; it has been said that this artery has been made a bug-bear to frighten students, and that the danger of wounding it has been magnified; but, gentlemen, look at the specimen (exhibiting one to the class) contained in this glass; see the effects of dividing this artery; I might say, here is murder—

"Out damn'd spot!"

This specimen was sent me by Mr. Lawrence, an excellent surgeon, the bare mention of whose name will be sufficient to awaken feelings of respect in the minds of all for his character as a surgeon, an anatomist, and a man. Mr. Lawrence dissected it from a patient who had died after the operation for strangulated hernia, and he found that the epigastric artery had been divided; thinking that it would be a valuable addi-

tion to the museum, he was kind enough to send it. One of our gentlemen was so unfortunate as to divide the artery, because he cut inwards instead of outwards, thinking that the hernia was inclined a little in that direction; therefore a person who is an excellent anatomist may wound the epigastric artery, if he divide the stricture in a lateral direction; but not so if he follow the rule that I have laid down, viz. to cut *directly upwards*. You must divide the stricture in the centre, and cut upwards, let the hernia be where it may; bear this rule in mind, and you will be in no danger of wounding the epigastric artery. I will now tell you how you are to treat the omentum and intestine. There is some difficulty in ascertaining whether the intestine be gangrenous or not; if there be any dark brown spots on it do not let that prevent you from returning it. Sometimes the intestine adheres to the sac; if the adhesions be slight, break them down with the finger, or divide them very cautiously with the knife. If they are in general strong, the best plan will be completely to divide the stricture, so as to return the strangulation, and leave the intestine in an irreducible state. An irreducible hernia is not dangerous, provided there be no strangulation. You will know whether the intestine be in a gangrenous state from the appearance of thick green spots, which may be easily broken down with the nail. What would you do under such circumstances? I cannot do better than relate a case in which you will have both precept and example: A woman was brought to this hospital with strangulated hernia, under the care of Mr. Chandler. The dresser came up to me (I was in one of the squares of the hospital at the time), and said that he was going to see for Mr. Chandler, and that if he were not at home, he would request me to operate. Mr. Chandler not being at home, I was sent for to perform the operation. There was a blush on the parts, which, together with their soft state, led me to think that gangrene had commenced; this opinion I soon found to be correct. As soon as I made an incision through the integument, there was a strong smell of putrescence and fæces, I proceeded, opened the hernial sac, and turned it aside to expose the intestine, and divided the stricture; the gut appeared almost in too bad a state to return. It then struck me, that I could relieve this patient, and I made an incision an inch long on the front of the intestine, allowed the fæces to escape, and returned the intestine to the abdomen. The operation was performed on a Friday; feculent matter continued to discharge through the wound, and not by the regular canal, till the Wednesday following. Two days after this, a week from the operation, she had several stools per anum, of a greenish colour; and the patient recovered. Some time after, Mr. Brown, of Rotherhithe, a very respectable surgeon, called on

me, and said that I should be surprised to hear that the patient I had operated on in this hospital, at such a time, had been delivered of a full-grown child. A curious circumstance attending this is, that she was with child at the time of the operation and did not miscarry. The operation was performed in March, and the woman was brought to bed in August, at which time there was no appearance of any thing to be seen.

The learned professor now went through the different steps of the operation for strangulated hernia on the dead subject, precisely in the way recommended in another part of the lecture.

LECTURE XXIX.

THE SUBJECT OF HERNIA CONTINUED.

I MENTIONED to you, gentlemen, in the last lecture the mode in which the intestines are to be treated under the different circumstances of adhesion, gangrene, or strangulation. But there is one point I omitted on that occasion. There is a peculiar sort of hernia which contains the cœcum; this gut sometimes descends into an inguinal hernia on the right side, and on dissection you find that it adheres to the posterior surface of the scrotum. This cœcum is not enclosed in the hernial sac, but the hernial sac is before it. Those who have studied the anatomy of the viscera know that the cœcum is confined posteriorly by cellular membrane, and that the peritoneum passes over it anteriorly. On the posterior surface of the cœcum there is no peritoneum, unlike, in this respect, to the other intestines, with the exception of the duodenum and colon. When the cœcum, therefore, descends it brings down the peritoneum in front; but behind there is merely cellular membrane, by which means it is confined to the scrotum so securely, that it is impossible, in many cases to return it; then the stricture must be divided, and the intestine allowed to remain. Last summer many of you had an opportunity of seeing this kind of hernia operated on, by Mr. Key; the patient did extremely well. I have never operated on a case of this kind myself, but have dissected it, and I always found the intestine adhering to the back of the scrotum, the same as when the bladder is in an inguinal hernia. When the bladder protrudes in a hernia, it is covered anteriorly by peritoneum, but posteriorly it is confined by cellular membrane, the same as the cœcum. When the cœcum is included in a hernia, it will be known by the *appendix cæci vermiformis*.

Treatment of the Omentum.—With regard to the omentum after the operation for strangulated hernia, it is more easy to treat than intestine.

If the quantity of omentum be small, and little changed in character, you must return it to the mouth of the hernial sac, so as to seal up the opening; if the omentum is only returned to this part, it glues the sides of the mouth together, and prevents the ready descent of hernia in future. This then is the plan you are to pursue with the omentum, when it is small, and its character little changed.

But it often happens that a considerable portion of the omentum descends. When this is the case, the omentum is not thin and fine as in its natural state, but the different layers unite and form a solid mass. Here are two specimens (exhibiting them to the class) in which large portions of omentum had descended. The plan that you are to adopt under these circumstances, is to remove a large part of the omentum by the knife, and return the remainder to the mouth of the sac to plug up the opening. After cutting away the omentum, numerous vessels will frequently bleed; these should be drawn out with a small pair of forceps and lacerated; the laceration of the vessels often stops the bleeding. When the vessels continue to bleed, ligatures should be applied; care should be taken that the ligatures are merely put on the vessels, and that no omentum is included. The ligatures must be let to hang out of the hernial sac, and in three or four days they will separate. When the omentum adheres to the internal part of the hernial sac, considerable freedom may be used in destroying the adhesions; but I would not advise the use of the knife; just tear through those first in front, with the finger, and then spread the liberated omentum out, and lastly, tear through the adhesions which confine the omentum to the back of the sac; ligatures must be applied to the bleeding vessels. When the adhesions are torn through, and the vessels secured, the omentum must be returned as mentioned above: take care that all the vessels are secured and that hemorrhage has entirely ceased; else when the omentum is returned, the warmth will bring on the bleeding.

OMENTUM IN A STATE OF GANGRENE.

When the omentum is in a gangrenous state, it will be known by the blood coagulating in the veins, and this is the criterion whether it is to be returned or not. To ascertain this, pass your fingers along the surface of the omentum, and if the blood be coagulated in the veins, there will be a crispy feel. The omentum in a state of gangrene has nothing of the blue appearance seen on gangrenous surfaces, nor any of the green spots to be found on the intestine in a similar state. When the omentum is gangrenous, excision is the treatment always adopted; cut away the omentum close to the mouth of the hernial bag, and leave the remainder to plug up the opening; the vessels must be secured. The practice of

the old surgeons used to be, to apply a ligature on the part just above the gangrene, a practice that one scarcely knows how sufficiently to condemn. What is the operation for strangulated hernia performed for? to accomplish what object? Why, to relieve the omentum or intestine from its strangulated state. Under the old plan, no sooner was this done, than a stricture, worse than the one which existed before the operation, was produced; consequently the continuation of the symptoms and ultimately destruction of life, used to be the consequence. The practice is one that cannot be thought of without our being shocked that it was ever adopted.

Treatment after the Operation.—You must bring the integuments together, and keep them in apposition by means of sutures; do not include any parts in the sutures but the skin, and bring the edges so in contact as to produce adhesion; if you can effect this a great advantage will be gained. After the operation for strangulated hernia there are two things from which danger is to be apprehended; first, that the intestines may not perform their office, and the fæces not pass in their natural course; secondly and principally, that peritoneal inflammation may come on, and produce the same effect as if gangrene were present. The object then should be to close the wound as completely as possible, and for this purpose slight pressure will be of service. If the hernial sac remains open, the process of adhesion will be difficult; but if adhesion of the sac takes place, peritoneal inflammation will probably be prevented. After the integuments have been brought together by means of sutures, slight pressure should be made by dossils of lint, and the parts should be supported in a suspensory bandage. The suspensory bandage will be of use in preventing the formation of matter in the scrotum. There are three things, then, that you are to attend to in the after treatment: first, keeping the parts together by sutures; secondly, applying pressure by dossils of lint; thirdly, the use of the suspensory bandage. You order the patient to keep the horizontal posture, but above all, direct that he have his evacuations on foul linen, and not be allowed to get up. If strict orders be not given to this effect, the patient will get up to go stool, and great mischief will most probably be done by the exertion. Mr. Cline operated on a patient in this hospital for strangulated hernia, and the parts were returned to the abdomen; but the patient got out of bed a short time after the operation, and when on the close-stool the intestine descended into the sac, and displaced the dressings. Mr. Cline was sent for, who found the hernia as large as before the operation; he reduced it, and ordered that the patient should not quit his bed. I mention this case to point out to you the necessity of enjoining the horizontal posture. You will be gratified on the fol-

lowing day if the patient have a motion. In five or six hours after the operation give a little sulphate of magnesia or castor oil. The more motions a patient has after the operation for hernia the better; I never saw any injury done to persons from having too many, but have seen them die for want of a sufficient number. When a patient has two or three motions, the surgeon thinks he will do well, but the danger is not over, and it will be necessary to keep up a free discharge from the bowels by opening medicines, or the patient will die. The history of a case is generally this: in four or five hours after the operation the patient has a motion, and in the course of twenty-four hours, two or three, and he will be supposed to be doing well. On the following day there will be no motion; the abdomen is tense and tender to the touch, and vomiting comes on. The patient, gentlemen, at this time is in the greatest danger; you must bleed largely and purge him freely by medicines or injections. You do not find that the peritoneal inflammation usually comes on, if venesection has been resorted to before the operation. Calomel with opium should be given; five, or even in some cases ten, grains of calomel, and from one to two grains of opium. It will be useless to give calomel with any other medicine than opium, for it will be rejected; purgative clysters, together with cathartic extract, should also be administered. Were I to tell you how many I have known do well for three days, and then die after all, I should enumerate a long list; great danger is to be apprehended for some time afterwards, and even those who have two or three motions within the first twenty-four hours often die. The patient will be sometimes affected with hiccough; this is not the result of gangrene, but peritoneal inflammation, and must be treated by bleeding and purgatives; these may be aided by a little opium.

I will mention to you the most striking example that now occurs to my mind of hiccough after the operation. I was sent for to Maidstone, to operate on a patient for strangulated hernia. The gentleman had a large intestinal hernia, and the symptoms were exceedingly severe. I performed the operation; returned the intestine, and left the patient in what is termed a comfortable state. I was exceedingly gratified on the following day to hear that the patient was very easy; but it was stated in the letter that the hiccough was as bad as when I operated. I wrote to say that this was not the result of gangrene. No, gentlemen, I assure you it is the result of peritoneal inflammation; and take my word for it, no other means but the antiphlogistic treatment will do. The patient of whom I am speaking was bled twice. The operation was performed on Monday, and the hiccough did not leave him till the following Sunday; during great part of the time there was tenderness of the abdomen

on pressure. The hiccough then, I again repeat, is not the result of gangrene, but of inflammation of the peritoneum, or intestine. The treatment you are to pursue is to deplete the patient, and procure copious evacuations from the intestines.

I will tell you the circumstances to be attended to respecting the return of a hernia: The operation does not prevent the future descent of the intestine; but the application of a truss early prevents it from being so large. The patient should be kept in bed for some time after the operation, and good granulations be produced. Dossils of lint should be applied and a truss, so as to make pressure, and close the upper part of the sac. Never let the patient rise from bed without a truss to press on the sides of the sac. It has been proposed to cut away the hernial sac, in order to produce a more rapid cure. The hernial sac has been cut away; and I will relate to you a case in which you will have an opportunity of seeing the result of this treatment: Mr. Holt, an intelligent surgeon, sent for me to go with him to Tottenham, as he was going to perform the operation for strangulated hernia; I went; and Mr. Holt operated; all the steps of the operation were well performed. When the stricture was divided and the parts returned, Mr Holt said, what shall we do with the hernial sac, for it appears quite detached and isolated? I stated that I thought it would be a fine opportunity for ascertaining the result of cutting away the hernial sac. It was removed at the neck, and in three weeks from this, hearing that the woman was out of bed, I called on her; she was up and had a truss on. On examining the part, I found that there was a rupture as large as that before the operation, nay, larger, and that there was no adhesion of the mouth of the sac.

The cutting away of the hernial sac is quite useless. Plans have been proposed of introducing gold wire for the purpose of dividing the hernial sac at the mouth, also of rubbing the parts with certain substances for the purpose of exciting adhesive inflammation; but all these proposals are mere quackeries. One of those fellows who are in the habit of publishing their cures of hernia, and their methods of preventing the future descent of the hernial sac, called upon me, and asked whether I would like to go and see a patient of his, whom he had cured by rubbing the parts with some preparation. "Why upon my word," said I, "I feel no inclination to go, for I know you might just as well ask me to go and see you jump to the moon!"—"Well, sir," said he, "then you will not see him?"—"No," said I, "I will not." Four or five months after, this man, having quarrelled with the junto with which he was united, came to me, and said, "Sir, it was entirely an imposition. What do you suppose we rubbed our patients with, in order

to impose upon the public ?"—" I cannot tell," said I.—" Sir," replied he, " it was nothing but hedge-hog's fat. It cost us some trouble to catch our hedge-hogs; but it was the fat of that animal with which we pretended to prevent the descent of hernia."—You may suppose, gentlemen, that I felt no regret at having refused to see this man's patient.

OPERATION FOR LARGE HERNIA.

I shall now proceed to describe to you the operation for hernia when of considerable size, which requires a very different mode of treatment from hernia of a small size. I know no situation in which a man is placed under greater difficulty than that in which a surgeon has to operate on a hernia of very considerable size, and finds a great quantity of intestine in the lap of the patient, and the parts so diminished from the length of time the hernia has existed, that there is no room left for the return of the intestine which has descended. He tries to push back the intestine; it eludes his efforts, and after repeated attempts, when he has at length succeeded in returning a considerable portion of it into the abdomen, the whole rushes down again into the scrotum. So much handling of the intestine necessarily leads to such a degree of inflammation as to occasion the death of the patient. In this manner, a large hernia, when operated upon in the common way, generally proves destructive of life. Here is an example (exhibiting a preparation to the class) which shows you the result of such cases. This preparation was taken from a patient in the other hospital, who had a hernia of a very considerable size, which was operated upon in the common way, by making an incision into the hernial sac. The surgeon who performed the operation, finding the intestine returning upon him in the manner I have described, another surgeon, who was present, said, " Let me try." He began trying apparently very gently and carefully, but the intestine eluded his attempts, and upon his using a little more force, it burst, and the fæces escaped over his hands. This man lived a week after the operation, and then died from want of nutrition. It was the small intestine which burst, and the fæces escaping by the orifice, there was no opportunity for such a degree of lacteal absorption as was necessary for the support of his constitution, and he died from irritation and inanition.

I shall now give you an account of a case, and describe to you an operation which is not difficult, and which may be adopted with safety to the patient in these cases. After the lecture, one evening, Mr. Birch's dresser came to me and said, " Sir, there is a patient with a very large hernia, which is strangulated; Mr. Birch does not like to come down to the hospital at such an hour, and I should be glad if you would under-

take it." I went immediately; the patient was brought into the operating theatre, and a most formidable hernia it was. I said to the gentlemen in the theatre, if I operate in the usual manner on this hernia, I know what will be the result; I shall either burst the intestine in attempting to return it, or I shall not be able to return it at all: I will not open the hernial sac. The man was placed on the table, and I operated upon him in the following manner:—I made an incision to the extent of three inches in the upper part of the hernia, an inch and a half above the abdominal ring, and an inch and a half below it, believing that I should find the stricture at the abdominal ring, as it was a large hernia, or not more than an inch above the ring. This incision exposed the tendon of the external oblique, above the abdominal ring, and the fascia of the cord, or superficial fascia, which is derived from the tendon of the external oblique below the ring. Having made this incision, and laid bare the fascia of the cord, I made a small opening to the extent of about an inch below the abdominal ring, and put a director into it. Having insinuated the director between the fascia of the cord and the cremaster, I passed it under the abdominal ring; and carrying a probe-pointed bistoury upon this director, I divided the ring to the extent of an inch. I then put my hands upon each side of this immense swelling; and as soon as I did so, I had the pleasure of hearing the gurgling noise, which every surgeon acquainted with this subject knows to be the token of the contents of the intestine passing into the abdomen: a portion of the intestines was returned into the cavity of the abdomen, but all the force I could venture to use could not return the whole. By dividing the stricture, however, the man was relieved from the symptoms under which he had previously laboured. On the following morning, when I visited the patient, I found that he had a very bad cough, in consequence of which the contents of the abdomen had been thrown again into the sac, and the hernia was as large as when I performed the operation. There were no symptoms of strangulation, however: the portion of intestine was easily returned into the abdomen by pressure; and I had ultimately the satisfaction of seeing this man discharged from the hospital perfectly cured. I have performed this operation three times: in two cases successfully; in one of them the patient afterwards died of peritoneal inflammation. All you have to do is, to bring the edges of the wound together, and let the hernia, if large, remain. The patient whose case I just mentioned wears a bag-truss, and is in the habit of coming to Launday's to get a new truss, which is made to lace so as to reduce the size of the hernia. If I had a large hernia strangulated, this is the operation which I would have performed.

HERNIA IN THE INGUINAL CANAL.

There is a small hernia that occurs above the abdominal ring, and does not emerge through it at all, which is equally as dangerous as a hernia of twenty times its magnitude. This is a case which it is difficult to ascertain in the living subject. A patient will come to you with symptoms of strangulated hernia, and you find a fulness on one side above the abdominal ring, which is not observable on the other; tenderness upon pressure of the part where the fulness is, and a great disposition to vomit. The operation which it will be necessary to perform in this case is, to make an incision along the course of the inguinal canal, a little obliquely above the abdominal ring, so as to avoid making the opening large. The incision through the integuments lays bare the tendon of the external oblique; having laid bare this tendon, and made an incision through it, the hernia immediately appears projecting through the edges of the wound. The hernial bag is covered by a tendinous process, which passes from the upper aperture, from which the hernia proceeds. As soon as the hernial sac is laid bare, a little fluid escapes; you will find the stricture at the orifice. Here is a beautiful preparation (exhibiting it to the class) in which you see the stricture, and the appearances which the hernial sac assumes. You are to introduce a small director into the orifice, and divide the stricture by making a slit upwards with a probe-pointed bistoury.

LECTURE XXX.

OF INGUINAL HERNIA IN THE FEMALE.

This disease is of less frequent occurrence in the female than in the male, in consequence of the smallness of the parts through which the ligamentum rotundum descends. The abdominal ring is small, the passage of the ligamentum rotundum from the abdomen much less than in the male, and the inguinal canal, upon the whole, less. Hernia in the female is therefore comparatively rare. When it occurs, the course which it takes is similar to that of inguinal hernia in the male, comparing the ligamentum rotundum in the former case to the spermatic cord in the latter. It begins midway between the spine of the ilium and the symphysis pubis; its origin being situated on the external side of the epigastric artery. It then enters the inguinal canal, passes along the canal, under the internal oblique and transversalis muscles, till it reaches the abdominal ring, where it emerges. Hernia in the female is commonly small, especially in the labia; the sac is much more consider-

able above the abdominal ring than below it. On this account there is considerable difficulty in the performance of an operation for this hernia. When you dissect a hernia in the female, you will find, immediately below the labia, a fascia covering the hernia similar to that in the male: the abdominal ring gives off a fascia, which descends into the labia. When the hernia is reducible, it requires a truss similar to that used for the male; as it is generally small, it will give way to pressure after about a twelvemonth's use, but it will be right to continue the truss for two years longer. Inguinal hernia is more commonly reducible in the female than in the male; in fact, I have never seen an instance of irreducible hernia in the female. If you should meet with one which contained omentum, you should endeavour so to apply the truss as to promote absorption of the omentum, and produce an adhesion between it and the internal part of the sac. When, from the gurgling noise, you ascertain that intestine has descended, it will be desirable that a truss should be constructed with a hollow in the pad, so as to embrace the hernia, and prevent the increase of its bulk, while at the same time it does not make such a degree of pressure as to give any interruption to the passage of the fæces. When this hernia is strangulated, the operation for it differs in some respects from that required for inguinal hernia in the male. When you have made your incision upon the hernia below the ring, you will find that the peritoneal bag does not contain either intestine or omentum, and that nothing but a little water escapes. This leads you to slit up the abdominal ring, and on putting your finger within it, you will find something contained within the sac, above the ring; this is generally intestine, but sometimes a portion of omentum descends with it. All the cases of inguinal hernia in the female which I have seen have been intestinal. Having divided the tendon of the external oblique, you will find a convolution of intestine has descended, and you will then look for the stricture, which you will generally find about two inches above the abdominal ring. In the male, the inguinal canal is considerably shortened by the approximation of the upper to the lower opening, but in the female the canal undergoes little alteration, and you will in general therefore find the orifice of the hernial sac at the distance of at least two inches from the abdominal ring. Having slit up the tendon of the external oblique from an inch to an inch and a half, and directed your assistant to draw it up, you will put a director within the sac, feel for the stricture, and dilate it upwards or outwards towards the spinous process of the ilium. The general rule is to divide it upwards, but it may be divided outwards with safety, as there is no danger in this case of cutting the epigastric artery, which is on the inner side. The last case of strangulated hernia, in the female, which I saw at

Guy's, was one under the care of Mr. Forster, and it was a very embarrassing one. When Mr. Forster had made his incision below the abdominal ring, he was surprised at observing a gush of water; and finding no appearance of either intestine or omentum, he doubted at first for a moment whether the disease was any thing more than a cyst containing water; but on insinuating his finger into the abdominal ring, which he did with some difficulty, he found a considerable bag above it. Upon slitting up the abdominal ring, and the tendon of the external oblique towards the spine of the ilium, he found a very small convolution of intestine embraced at the orifice of the hernial bag, which was the seat of the stricture. He introduced a director, dilated the stricture; and this patient did extremely well. In this hernia, it is to be recollected that the stricture is, in almost all cases, at a very considerable distance above the abdominal ring. I am not aware that I have any other observations to make on this disease, as it occurs in the female, and I shall proceed therefore to the consideration of

CONGENITAL HERNIA

This, as you are aware, is usually hernia of the tunica vaginalis testis, but it does not always happen that hernia of the tunica vaginalis is congenital; it sometimes appears in the adult. The way in which it takes place may be thus explained:—The tunica vaginalis is open to the abdomen a little prior to birth, so that a portion of intestine is very readily admitted into this part. It scarcely ever happens in the young subject that any thing but intestine is contained in hernia of the tunica vaginalis, the omentum not reaching so low as the orifice. If the tunica vaginalis is not closed immediately after the birth of the child, a hernia will make its appearance. The appearance of this hernia is well known to nurses; they make a distinction between what they call a watery and a windy rupture. Now what they call a watery rupture is hydrocele, which not uncommonly takes place in very young children; and what they term a windy rupture, is hernia congenita. The former is quite transparent, and, if n t congenital, is capable of being returned into the cavity of the abdomen; the latter may be returned into the abdomen, and in so doing you will hear a gurgling noise. It sometimes happens that the tunica vaginalis, though not closed, will not admit of the descent of a portion of intestine, because the orifice is extremely small, and the person will arrive at the age of from twenty to thirty years before the hernia appears. The descent of a small convolution of intestine is then generally the effect either of relaxation or of some sudden or disproportioned exertion. There is a specimen in the collection of a tunica vaginalis open in the adult; the opening is sufficient to admit a

large bougie, but it does not appear that the person from whom it was taken ever had hernia. When you meet with a case of hernia of the tunica vaginalis in the adult, and you ask him how long he has had hernia, he will tell you for a very short time—from a week or ten days to two or three months, but that he is perfectly sure he never had it when a child.

When intestine or omentum has descended into the tunica vaginalis, reaching to the lower part of the scrotum, the testicle is involved in the swelling, so that it cannot be distinctly felt. This is a distinguishing mark between congenital hernia, or hernia of the tunica vaginalis, and common hernia; the former is much more concealed and buried in the surrounding parts. In the latter, the coverings of the hernia, namely, the fascia of the cord and the cremaster are thin; but the tunica vaginalis being thicker than the peritoneum, the parts are not so readily distinguishable in hernia of the tunica vaginalis as in the common hernia. The testicle is, besides, considerably diminished in size in the latter species of hernia, in consequence of the pressure on the sac preventing the free circulation of the blood-vessels in that part. In hernia of the tunica vaginalis, the spermatic cord is not unfrequently altered in its direction, the artery and vein being on one side, and the vas deferens situated posteriorly in the outer part. Here is a beautiful specimen (exhibiting it to the class) illustrating this case. It not unfrequently happens, in this species of hernia, that the testicle does not descend completely into the scrotum, and the peritoneal sac descends lower than the situation of the testicle.

When the hernia is in a reducible state, and a child is brought to you whose testicle is situated above the abdominal ring, you should advise the parent on no account to apply a truss, but to let the hernia extend itself until it has gradually brought down the testicle into the scrotum, and then, and not till then, to apply a truss. Many years ago, a gentleman brought his child to me with hernia, whose testicle had not descended, and asked me what was to be done. I told him, if a truss were applied, it would press upon the testicle, waste, and at length destroy it; but if the hernia were suffered to increase till the testicle was brought down into the scrotum, there was but little risk of its being strangulated in very young subjects, and when the testicle had descended, it would be the proper time to apply a truss. This gentleman brought his son to me when he was nineteen years of age; his testicle had then descended, and a truss was applied, which kept it below the abdominal ring, I am happy to say that this patient, who now holds a distinguished situation, has taken to himself a wife, and produced to himself a numerous progeny. When you are therefore consulted under

such circumstances, this is the plan, gentlemen, which I recommend you to pursue. You will be consulted in cases of hernia congenita as to the time at which a truss should be worn: a truss which springs may be applied when the child is three months old. The reason why a truss has not been applied sooner is, that the parts are kept in so wet a state that a truss is very speedily destroyed. However, this reason no longer exists; for an ingenious truss has been constructed by Messrs. Salmon and Ody; which may be worn almost immediately—within a fortnight at least—after the birth of the child. The pressure should be extremely light; in general, you should recommend the parent, at first, to have a truss made in the form of the common spring-truss, without any spring. A pad, retained by a leathern strap should be placed upon the hernia, fastened round the abdomen of the child; and another strap should be passed between its thighs. While the child is kept in the horizontal position in the arms, the hernia will, in general, be prevented from descending; and, at the end of three months, a truss may be borne with ease.

With respect to the congenital hernia, in the irreducible state, I do not know that any particular treatment can be adopted different from that which is practised in the common inguinal hernia. The operation in strangulated hernia of the tunica vaginalis is more difficult than that in the common hernia, the parts in the former being more concealed and involved in thicker parietes than in the latter. When you make your incision on the sac, you should take care not to open the tunica vaginalis low down, for two very obvious reasons: first, because you should always have sufficient tunica vaginalis to cover the testicle, to prevent any unnecessary irritation; and secondly, because the spermatic artery and vein are situated obliquely on the fore part, and you would be in danger of cutting through each of these. You should therefore leave three inches of the tunica vaginalis undivided below. In general a considerable quantity of water is found with the intestine in the tunica vaginalis, a much greater quantity than in the common hernia; because the tunica vaginalis is a more secreting surface than the peritoneum. In congenital hernia the stricture is generally about an inch and a half above the abdominal ring. When the hernia is very large, the seat of stricture will descend to within half an inch or an inch of the abdominal ring; but this very rarely happens. I have already endeavoured to expose to you the falsity of those statements which place the seat of stricture at the abdominal ring. Every surgeon, who has operated five times in inguinal hernia, and knows any thing of the anatomy of the human body and of practical surgery, must be aware that the stricture is hardly ever to be found at the abdominal ring. In hernia congenita,

it is even less frequently to be found in that situation than in common inguinal hernia. If, therefore, a surgeon is called upon to operate for strangulated hernia, and expects to find the stricture at the abdominal ring, he is not fit to perform the operation at all: and if any of you were to state, in your examination at the College, that the abdominal ring was the seat of stricture, such a man ought to be immediately turned back. It is contrary to the truth; and every man, who has dissected the disease, and understands anatomy, must know it to be a most abominable error. I call it to be a most abominable error; because it necessarily leads to the most dangerous consequences in the operation for strangulated hernia. A man, who thinks that by slitting up the abdominal ring he can push the intestines into the abdomen, either fails in doing it altogether, or if he gets a portion of intestine within the ring, the stricture and all the dangerous symptoms of strangulation still remain. You will look for the stricture, therefore, in congenital hernia, at an inch or an inch and a half above the abdominal ring, and directly opposite to the tendon of the transversalis muscle. I am not aware of any circumstance in this operation which differs from that adopted in the common inguinal hernia. When the intestine adheres generally to the tunica vaginalis, all you are to do is to divide the stricture, and leave the intestine within the tunica vaginalis. If the adhesion is only in a particular point, you might cut through it; but you must not attempt to cut through any considerable portion of the tunica vaginalis, as you would run great risk of dividing the spermatic artery or vein. All you should do, after dividing the stricture, is to bring the edges of the wound together, and make them adhere; in this way you leave the patient as you found him, with his irreducible hernia, but relieved from the dangerous symptoms of strangulation. The patient should wear a laced bag-truss after the operation.

There is a particular species of hernia of the tunica vaginalis, of which I have hitherto seen but three examples; there are two specimens in the College, and one I shall now send round to you. This is an *encysted hernia* of the tunica vaginalis; and I shall endeavour to explain to you the way in which it takes place. The hernia in this case is very much concealed within the scrotum; a bag is situated within the tunica vaginalis, which is not formed by peritoneum, but is a cyst produced in the following manner:—Opposite to the situation of the abdominal ring adhesion takes place between the sides of the tunica vaginalis, and a pouch is formed leading into the tunica vaginalis. A stricture crosses the bag directly opposite to the abdominal ring, shutting it up; and as the intestine descends into the upper part of the bag, the adhesion becomes elongated, and at length a sac is produced. The case from which

this preparation was taken I had an opportunity of seeing at the other hospital. The patient was under the care of Mr. Forster; he came to the hospital with symptoms of strangulation, but the hernia was extremely concealed. He was frequently persuaded to submit to the operation for strangulated hernia, but he constantly refused, and chose rather to die than to undergo the operation. On examination of the body after death, it was found that a cyst had formed, containing a convolution of intestine, which became strangulated at the orifice, and was the cause of death. There was a quantity of water in the cyst; the stricture was just at the mouth of the adhesion in the tunica vaginalis.

OF FEMORAL HERNIA.

Before I proceed to describe to you the operation for femoral hernia, I shall demonstrate to you on the dead subject the anatomy of the parts concerned in this species of hernia. The superficial fascia of the abdominal muscles is given off by the tendon of the external oblique, which descends upon the spermatic cord, and is united to the edge of the abdominal ring in its descent. This structure, which is of considerable density, is continued to the thigh, and forms a covering of femoral hernia. The absorbent vessels and superficial veins are kept within their boundaries by this fascia. From Poupart's ligament two portions of fascia pass upwards, the fascia transversalis and the fascia iliaca. In cutting through the fascia lata a second portion of fascia will be found to be given off from the back part of Poupart's ligament, which forms the sheath of the femoral artery and vein, which are separated from each other by a septum. The anterior crural nerve has no connexion with the sheath, but form the boundary of the sheath on the outer side. It is into this sheath that femoral hernia descends. It begins to descend between the border of Gimbernat's ligament, which is the lower edge of Poupart's; the femoral artery being on the outer side, and the vein on the inner. The sheath becomes elongated when femoral hernia is produced, and it is turned over Poupart's ligament; so that the lower part of the hernia is doubled on the upper part, and its mouth is just opposite the fundis or basis.

LECTURE XXXI.

OPERATION FOR FEMORAL HERNIA.

At the conclusion of the last lecture, I described to you the parts connected with femoral hernia, and the course in which it descends; I shall now resume femoral hernia, show the operation for it, and conclude the subject of hernia.

When the peritoneum which covers the femoral hernia is protruded, it descends on the inside of the femoral vein, and is received on the inside of the crural sheath. Before the hernia protrudes, it elongates the sheath, which forms a covering for it. When femoral hernia protrudes, it descends on the inside of the epigastric artery; and there is only the danger of wounding this vessel, in the operation of cutting upwards and outwards; recollect, then, that the epigastric artery is to the *iliac side* of the hernia. In the male subject, the spermatic artery crosses on the fore part of the tumour, but at such a distance from the place where the stricture is situated, that there is little danger of wounding it in the operation for femoral hernia. A man must be very badly acquainted with the nature of the parts, or the principle of the operation, to carry his incision so high up; there is no necessity for it; a very slight touch of the stricture with the knife will be quite sufficient to allow of the return of the parts. Remember, however, that on the fore part of the tumour, above Poupart's ligament, covered in the inguinal canal, is the spermatic artery, which ought never to be in danger of being wounded. On the inner side is situated Gimbernat's ligament; on the outer side are the femoral vessels; there is also situated near the mouth of the hernial sac, but to the outer side, the epigastric artery. The part through which femoral hernia protrudes is the opening left in the *fascia lata*, to give passage to the absorbent vessels, and the vena saphena. The femoral hernia is not behind this fascia, but protrudes through the opening, and is then situated on its fore part; the crural sheath is carried before it, becomes elongated, and always forms a bag for the hernia.

The appearances of femoral hernia are such as to require considerable knowledge to discriminate them from those presented by other complaints: it has the situation of bubo; in some subjects it is small and very little moveable, and projects very slightly. Femoral hernia may be confounded with other diseases, I assure you; therefore, all the circumstances connected with it should be particularly attended to. Now, gentlemen, if you dissect a femoral hernia to ascertain the appearances that are to be found, you will see, first, after laying open the skin, a structure which I described to you in the last lecture, the *superficial fascia*, a few absorbent vessels will also be seen: in consequence of the pressure of the hernia, the fascia is distinctly observable to the eye, and is a structure of considerable density. Secondly, when you have cut through this fascia, the sheath of the femoral vessels becomes exposed (*fascia propria*), forming a complete bag, so as to close the hernia, let its size be what it may. Here is a femoral hernia (exhibiting a specimen to the class) with a sheath covering it, and which may be

easily separated from its surface. Thirty years ago I did not know of the existence of this structure. Mr. Weston, a gentleman to whom I am indebted for a great many opportunities for pursuing morbid anatomy, sent for me one day to examine a person who had died of strangulated femoral hernia. After dissecting through the superficial fascia, I thought that I had come to the peritoneal sac. I cut through the structure, it was of considerable density; but on examination I found it was not the peritoneum, but the crural sheath; I then arrived at the peritoneal sac, after having first cut through the integuments, superficial fascia, in operating for femoral hernia. After having cut through the superficial fascia, in operating for femoral hernia, you will find in some subjects a quantity of fat. In the last case, gentlemen, operated on at these hospitals, after the opening was made through the superficial fascia, the surgeon said, "Here is omentum;" but, on examining more particularly, he found that he had not opened the hernial sac, and then discovered that the substance mistaken for omentum was fat. There are two sacs of the same form covering femoral hernia; the first consisting of the elongation of the crural sheath, the second of the peritoneal covering. Every case of femoral hernia will be found to have a bag or covering, formed of the crural sheath, except when the hernia has been so large that it has given way. Year after year I have met with cases of femoral hernia, and never found one but had a distinct covering, formed by an elongation of the crural sheath. The peritoneal sac being exposed, an opening is to be made into it, and the finger introduced towards the cavity of the abdomen, to ascertain the seat of stricture. The finger sometimes cannot be got within the femoral ring (at which point the stricture is situated), and then a director merely must be used. Such is the difficulty in femoral hernia of getting any instrument beneath the stricture.

Femoral hernia is subject to very little variety. I have seen a case where the hernia had acquired such a size that the sides of the sac had given way, and it protruded to a great distance from Poupart's ligament. This only happens in those cases where the hernia is very large. Another variety is, when the obturator artery arises from the epigastric, and surrounds the sac. Dr. Barclay, a gentleman of great respectability in his profession, and possessed of extensive anatomical knowledge, was so kind as to send me a specimen of femoral hernia, in which the obturator, arising from the epigastric, passed over the front of the sac. But although the obturator not unfrequently arises from the epigastric, it rarely passes over the front of the hernial sac, but goes behind it to the obturator foramen. Another case of this kind fell under the notice of Mr. Wardrop, whilst travelling on the continent. Excepting these

varieties, I have met with no other; the course is the same. Other varieties have been said to occur, but I have never met with them, nor do I believe they are ever found.

Now, gentlemen, we shall proceed to speak of the treatment of femoral hernia; and, first, the

TREATMENT OF REDUCIBLE FEMORAL HERNIA.

The truss required for this kind of hernia is different from that which will do in inguinal hernia.

The pad should be at right angles to the spring, placed lower down than in inguinal hernia, so as to cover the crural sheath, and the space through which the hernia protrudes.

The truss I mentioned in the last lecture is sometimes used, but it does not answer quite so well as the truss I have just alluded to, as it is likely to arise from its place. The truss that ought to be worn is a right-angled truss, *i. e.* with the pad at right angles to the spring. But I must state to you, that femoral hernia is rarely cured by the application of a truss; it is right that I should recommend this plan of treatment to your attention, and that it should, in some cases, be steadily persevered in; but, generally speaking, it fails to accomplish the object in view; and the reason is this, that Poupart's ligament supports the pressure of the truss, and great strength is required, so that the truss shall bear on the hernia. I have seen a child of two years old have a truss applied for femoral hernia; it has been steadily worn till it was twelve years of age, when the hernia was in the same state as before the application of the truss. A truss, however, should be worn, to prevent the farther descent of any of the parts, but the result is generally less successful than in inguinal hernia.

TREATMENT OF IRREDUCIBLE FEMORAL HERNIA.

In this complaint, it will be right to wear a truss, as I mentioned on the last evening, with a hollow in the pad, so as to receive the hernia, and confine it. A gentleman, with an irreducible femoral hernia, containing omentum, consulted me. I recommended a truss, with a depression in the pad, so that the hernia should be received into a cup, and the sides of the sac be gently pressed. Two years after this I saw my patient, and I inquired how his hernia was; he told me that I should be surprised to hear that it was quite gone. This I doubted: he went home with me, and on examination I found that by pressure on the sides of the hernial sac, most of the omentum had been absorbed, and that little remained. In the treatment of irreducible femoral hernia,

the truss is to be applied, and if the hernial sac contains omentum, there will be a chance of its being absorbed.

TREATMENT OF STRANGULATED FEMORAL HERNIA.

The symptoms of this complaint are more urgent than those of strangulated inguinal hernia; and the reason is, that the orifice through which the femoral hernia protrudes is smaller, and the pressure consequently greater. The patient complains of more pain than in inguinal hernia, and rarely lives so long (if the stricture remain) as a person under the same circumstances with the other kinds of hernia. I have known a patient die seventeen hours only after the hernia (femoral) had become strangulated. With strangulated inguinal hernia, I have known patients live a week; in femoral, they generally survive four days, if the stricture remain; but I have also known them die in so short a space as seventeen hours.

Suppose you were called to a case of strangulated femoral hernia, how would you proceed?—You would first resort to the taxis; the patient must be placed on the bed, with the shoulders elevated, the knees bent at right angles to the body, and approximated to each other, so as to admit an arm only between; then you employ pressure on the hernia. The hernia is to be pressed directly downwards, in order to get it below Poupart's ligament; if you press it upwards, without having first done this, you will merely get it farther above the ligament. It must first be brought below the level of Poupart's ligament, and then kneaded between the fingers, and pressed upwards. The form of femoral is different, as I explained to you, from that of inguinal hernia. By this drawing (here the learned professor drew a diagram of the state of the parts) you see that the body of femoral hernia is turned upwards and forwards over the neck, and nearly at right angles to it above Poupart's ligament, and it would be mere folly to press it upwards till it has first been brought downwards, as the hernia would only be doubled the more on itself. Having failed in your attempt at the taxis, you employ the tobacco injection, bleed the patient, and use the warm bath. No time, however, is to be lost in femoral, as there is less chance of reducing it than in inguinal hernia. These means failing, you must resort to the operation; it is a case in which delay occasions much mischief.

I will now show you, as far as I am able, the operation for femoral hernia, but we shall not have the same advantages now as on the other occasion. Not having a femoral hernia to perform the operation on, I have introduced a piece of intestine under Poupart's ligament, and formed a hernia, which, I believe, will answer the purpose.

In operating for femoral hernia, you make the first incision in the course of Poupart's ligament, along the tumour, extending from one side to the other; the second you make at right angles to the first, towards the umbilicus, so that the two incisions resemble the letter ⊥ inverted; the angular flaps are to be next dissected off, and reflected, so as to allow of greater room. By this incision you expose the superficial fascia, which you next divide, and the hernial bag, called by some *fascia propria*, is brought into view. This is next cut through, and the hernial sac, or peritoneal covering makes its appearance. I will relate to you a case which shows what happens when a person is unacquainted with the structure of the parts. Many years ago a patient had symptoms of strangulated femoral hernia, which required operation; I met with the medical man, the next day, who operated, and asked him how he had succeeded; he stated that he had had great difficulty. The fact was, that he had not been aware of the existence of the crural sheath, which he had mistaken for the peritoneal covering, and that the hernia was returned into the abdomen, together with its sac. The femoral vein was wounded in the operation, which also greatly confused the parts. The symptoms remained the same, and on the following day the patient died. On examination, it was found that the hernia had been returned into the abdomen without the hernial sac ever being cut through; and this arose in consequence of the surgeon not being aware of the existence of the crural sheath.

The next point is to make an incision into the hernial sac, with the greatest possible care, and then introduce a director to ascertain the seat of stricture. Now, gentlemen, having opened the hernial sac, and exposed the intestine, the circumstance to be determined is, in what direction are you to divide the stricture: there is only one mode that I would advise you to adopt in practice, and that is, divide the stricture directly *upwards* and *inwards* a little inclined towards the umbilicus. I will first show you how the stricture is to be divided, and then point out the objections to the plan. After introducing the director, a bistoury, blunted at the point, is to be put on it, and placed against the stricture; in this way there is no danger of wounding the intestine. The bistoury is to be gently raised, and with a slight touch of the instrument, the fibres will give way, and the intestine readily return into the abdomen. But it has been recommended to cut in the direction of Gimbernat's ligament, towards the symphysis pubis; there will be no necessity for this, as the stricture is not situated at Gimbernat's ligament; it is never known to be there. The seat of stricture, in femoral hernia, is at the crural arch, just where the intestine leaves the abdomen; and when this is slightly divided, the stricture gives way, and by

a little pressure the parts are easily returned. I have known Gimbernat's ligament divided, under the supposition that it was the seat of stricture, whilst the stricture itself has remained undivided, and the patient died. This shows the folly of stating that Gimbernat's ligament is the seat of stricture. Whoever dissects a strangulated femoral hernia will have an opportunity of learning this for himself. Surgeons will find that the division of Gimbernat's ligament will not liberate the stricture, that it will remain the same; and that the constriction is at the *crural arch*. There is a danger in operating for femoral hernia, where the intestines are doubled up on themselves. A case of this kind occurred once at one of these hospitals:—One of the gentlemen attending these institutions came up to me one day, and said that there had been an operation for femoral hernia, and that the intestine had been cut into; I inquired how this happened, and was informed, that the mouth of the hernial sac being divided, the parts did not return; the division was made still farther, and the knife was introduced two or three times; till at last feculent matter came from the wound—the intestines having given way. I was aware the opportunity for examining the part would soon arrive—one satisfaction at least that there is from a bad case, by which we may learn our faults, and gather information to guide us in similar cases. On examining this patient, it was found that two convolutions of the intestines had been cut by the knife, just at the mouth of the hernial sac, and that Gimbernat's ligament had been divided. Persons, who think the stricture is at Gimbernat's ligament are grossly ignorant of its real seat, and I can scarcely tell how to express my contempt for those who resist the evidence of their senses. I have my feelings on the subject, other persons have theirs; but it is my duty to state to you my views on this complaint; if I did not relate the result of my experience, of what use has been my lecturing here for thirty-two years? and for what purpose have I attended hospital practice during the space of forty years? It is only the opportunities which I have had of watching disease that makes it worth while to hear me, and that affords me pleasure in teaching you. (*Applause.*) I do not mention it to gain your approbation, but to enforce on your minds that nothing will avail in practice but the *tact* which is gained at the bed-side of the patient, and that any thing else is of comparatively little importance.

UMBILICAL HERNIA.

Umbilical is next to inguinal hernia in frequency, if not before it; it very frequently occurs, but whether more or less so than inguinal, I am not quite certain. Umbilical hernia is very common in infants soon after birth, and to these cases you will be most frequently called. In

adults, where there is great obesity, in pregnant women and children, this complaint is often found. In infants it will soon be recognized by the situation of the cord. Recollect the anatomy of the part, that there is an opening in the *linea alba* and the peritoneum lines it internally. When a hernia takes place, this opening does not close; the peritoneum equally lines it with the other parietes of the abdomen: when the hernia, therefore, protrudes, the peritoneum is always carried before it, whether in youth or advanced age. When the hernia has been very large, I have seen one or two cases without the sac; not but there was a sac at the beginning, but the hernia having acquired a very large size, the sac became lacerated or partially absorbed, and the intestine has been thrown in close contact with the skin. I have seen an umbilical hernia descend as low down as the upper part of the thigh. This kind of hernia is covered with a superficial fascia, which, however, often becomes absorbed. Umbilical hernia is subject to little variety either in form or size. Occasionally there are two bags of intestine, separated by a septum. A female came to this hospital with strangulated umbilical hernia, was operated on, and recovered. Some years after she came again, with another hernia, a little below the spot where the first was, and was operated on again; it was found there was a complete septum between the two. The upper hernial tumour was strangulated at first, the lower one the last time.

TREATMENT OF REDUCIBLE UMBILICAL HERNIA IN CHILDREN.

The treatment to be pursued in children, is to apply one-half of an ivory ball on the umbilicus, and over this adhesive plaster and a belt; the belt, however, will be of no use unless supported by straps which come round the lower part of the belly and the thighs. A little waistcoat fastened by two strings will be of use.

REDUCIBLE UMBILICAL HERNIA IN ADULTS.

In adults, at the beginning, the plan of treatment should be the same as in children; but if by means of the ivory ball the hernia should not be returned within the opening of the umbilicus, a pad, covered with black silk, and fastened by adhesive plaster, is to be placed over the part. When the hernia is reducible, a truss should be worn. It will seldom effect a cure and is often liable to shift its situation; but a truss should be worn, as it affords a shield to the abdomen, where the hernia is pendulous, and there is much obesity.

The truss that should be worn consists of two broad belts, which must come round and buckle on the abdomen. But as this is continually

liable to change place, a narrow belt joined to the broad one should also go under the pendulous part of the belly.

IRREDUCIBLE UMBILICAL HERNIA.

A hollowed truss, on the same principle as the one employed in irreducible femoral hernia, should be worn in this complaint. It should be buckled round the abdomen, and if omentum be contained in the hernial sac, it will be likely to be diminished in size, and the danger of the sac bursting will also be prevented. In strangulated umbilical hernia, before the operation is resorted to, the tobacco clyster should be employed, as it has a greater effect in relaxing the muscles and taking away the cause of the stricture in this than any other kind of hernia. Suppose you were called to a strangulated umbilical hernia, how would you endeavour to return it? If it were small, by the hand alone; but if it were very large, you must take the bottom or flat surface of a wooden platter, lay it on the abdomen and press on it. (Here the learned professor showed the mode of doing it, which excited a smile throughout the class.) When the pressure has been kept up for some time, the orifice at the umbilicus becomes dilated, and the hernia returns. If the hernia is large, the means just mentioned must be used; if small, employ the taxis, as in inguinal hernia.

OPERATIONS FOR UMBILICAL HERNIA.

Of all operations for hernia, this is the most simple and most easily performed; but it is not one of the most successful—there is the difficulty of obtaining a flap of skin to close the opening. The plan you are to adopt in operating is to make first an incision across the tumour, and then another at right angles, so that the whole is like the letter T inverted. The integuments being thus divided, the corners of the incision are turned to one side, by which means the hernial sac is brought into view. This being carefully opened, the finger is to be passed to the orifice of the sac, at the umbilicus, and a blunt-pointed bistoury introduced on it. The stricture is to be divided upwards, in the direction of the ensiform cartilage. Having returned the intestines, the parts are to be brought together, and a flap formed from above to cover the opening. If adhesion of the sides of the wound can be affected, the danger of peritoneal inflammation will be lessened. Dossils of lint and adhesive plaster are to be applied over the wound. The after treatment is the same as for other hernia.

VENTRAL HERNIA.

I do not know that there is any thing in this kind of hernia requiring a distinct notice. When it occurs low down, care must be taken, when operating, of the epigastric artery; but of this your anatomical knowledge will put you on your guard. The intestine generally protrudes either through the openings in the lineæ semilunares, or lineæ transversæ of the abdomen, which become enlarged.

[Sir Astley concluded by observing, that the diseases of the eye came next in order, and that Mr. Green would deliver the lectures on those affections, forming a series of six, after which he should resume the course, on the subject of Urinary Calculi.]

LECTURE XXXII.

ON THE DISEASES OF THE EYE.

Gentlemen.—In speaking this evening of the diseases of the eye, I cannot but observe that there seems no good reason why the treatment of these diseases should be excluded from the general practice of surgery. for the treatment of these, as of all other diseases, depends on the same principles of cure; and when diseases of the eye occupy exclusively the attention of persons calling themselves oculists, they are very apt to be treated in an empirical manner. It is desirable, therefore, that surgeons of good general education should direct their attention to this subject. It has been said, indeed, that they have hitherto paid too little attention to this part of their professional duties, but I think this reproach is fast wearing away. In the consideration of this subject I shall first speak of simple inflammation of the tunica conjunctiva; then of its modifications, its consequences, and treatment. I shall next speak of simple inflammation of the deeper seated tunics, those of the globe of the eye; the consequences of such inflammation, and the treatment which it may be proper to adopt. Thirdly, I shall describe the diseases of the lens, and particularly that disease of the crystalline lens which terminates in cataract, and the operation which it is necessary to perform for that disease. Lastly, I shall speak of the diseases of the appendages of the eye, their treatment, and the operations required for their cure. In this evening's lecture I shall confine myself to

INFLAMMATION OF THE TUNICA CONJUNCTIVA.

And first of simple inflammation of the conjunctiva.

This, however, may be divided, like other inflammations, into acute

and chronic. The symptoms of inflammation of the conjunctiva do not differ from those of inflammation of other parts of the body, except in so far as they are modified by the structure of the part, and by the function of the organ. Indeed the change which takes place in inflammation of the conjunctiva may be regarded as a very beautiful instance and illustration of the change which takes place by the process of inflammation in general. I have only to premise, before speaking of the symptoms, that the inflammation may exist in various degrees, from the slightest degree of excitement up to inflammation of the most violent and intense character.

The first symptom is redness of the part: which is very remarkable, because the blood naturally conveyed by the vessels to this part is colourless. Under any existing irritation, the vessels are distinctly observable, and become injected by red blood. When the irritation continues, the vessels become still more apparent, and at length all the interlacements and anastomoses of the vessels of the conjunctiva partake of the inflammation, and present almost one uniform appearance of redness. During this time more or less pain is experienced; at first, as the vessels become filled, an uneasy sensation is felt; this increases, and at length, upon the admission of light, a sharp lancinating pain is experienced: the patient is under the necessity of keeping the eye closed, and, indeed, has some difficulty in raising it, not only from the pain he suffers, but from the degree of fulness and swelling with which it is accompanied. This pain goes on increasing, and at length the patient complains of a burning heat, and a sensation as if some extraneous body were lodged in the conjunctiva: a sort of grating between the conjunctiva and the lid. At this time the admission of the least light or air produces such lancinating pain, that the eye is spasmodically closed. During the first part of the inflammation there is a more abundant secretion of tears, and this generally increases until there is a constant flow of water from under the lids.

It sometimes happens that, at the highest stage of excitement, this increased secretion is suddenly diminished, and there is a preternatural dryness of the eyes, producing painful sensations. A considerable degree of swelling takes place; the conjunctiva becomes turgid from the increased quantity of blood admitted by the vessels, and effusion follows. Although the swelling is pretty equally diffused over the whole surface of the conjunctiva, it seems to be the greatest at the transparent cornea, because here the coat is more tightly adherent. The conjunctiva is here elevated in a circular fold, and this appearance is called chemosis. The eyelids are in general more or less swollen from the same cause: namely, the greater determination of blood to the part, and the filling of the

vessels. Not only is pain experienced in the eye from the causes I have mentioned, but also a sense of weight and fulness in the globe of the eye, as if the ball were too large for the socket. The neighbouring parts also, the forehead and temples, partake of the pain; there will be a shooting pain to the maxillary bone, or more deeply seated in the head; these pains are in some instances extremely violent. This train of symptoms is attended with a greater or less degree of constitutional irritation. The patient complains of great lassitude, prostration of strength, chilliness, or rigor followed by heats. His skin will often be hot and dry, and his pulse quick and hard; his stomach will be affected, and nausea or vomiting produced; he will often complain of pain in the back, and in short of all the symptoms which indicate a considerable fever of the sympathetic kind, arising from local irritation. The degree in which these symptoms occur will of course vary according to the constitution of the patient. In young and robust persons there will often be a high degree of local inflammation, without much constitutional irritation; while, on the other hand, in delicate and irritable patients, a much less, nay sometimes a very trifling degree of local inflammation will be accompanied with violent symptoms of constitutional derangement. Accordingly, although, *cæteris paribus*, the degree of constitutional irritation will be proportional to the degree of local excitement, this principle will be so much modified by the particular constitution of the patient, that in cases where, from the violence of the inflammation, much constitutional derangement might be expected, very little will occur; and *vice versa*, where, from the slight degree of local excitement, very little might be expected, it will sometimes happen that a great degree of constitutional irritation will attend it. So much for the symptoms of ophthalmia, as existing in simple inflammation of the conjunctiva, without any particular modification. It will not be necessary to point out particularly the predisposing causes of this complaint, because they do not differ from the predisposing causes of inflammation in any other part of the body. I shall only mention, therefore, some of the causes which most frequently produce irritation in the eye, and lead to inflammation of the conjunctiva. Any extraneous body lodging in the conjunctiva will produce this effect; and this is so frequently the cause of inflammation, that it will be right in all cases carefully to examine its surface, in order to ascertain whether there is any extraneous body in it, such as a particle of dust or sand, a piece of grit or lime, or any of the scoriæ which often fly off from iron while it is beaten on the anvil. Any extraneous body of this kind will readily produce irritation, and inflammation of the conjunctiva. Variation of temperature, especially when accompanied with any sudden access of light, will produce

this inflammation. Thus it has often happened that persons who have gone out of a warm room to look at fire-works have been attacked with it. The change of temperature, together with the brilliant light to which the eye is exposed, seem to produce it. Persons sitting in a hot room, or a theatre where there is much light, and exposed at the same time to a draft of cold air, have often had inflammation of the conjunctiva. So particular states of the atmosphere will become in some degree excitants of this inflammation, and it has been observed to be more frequent during the prevalence of easterly winds. There seems to be some ground for this opinion. Other causes of this inflammation may exist, but it is not necessary to enumerate them more at large. The principal causes are, the admission of any extraneous body and variations of temperature, especially if accompanied by intense heat and light, or partial exposure to drafts of cold air. I have said that this inflammation is either acute or chronic, let us consider in what the chronic stage of it consists. The term *chronic* is not, as its etymology would lead you to suppose, applied merely with reference to duration of time; it is not only applied to signify that state of congestion and debility of vascular action produced by the acute stage, but it is also applied to that state of inflammation which from the commencement has a character of atony and debility. As this is the more frequent form in which you will find this inflammation, whether primary or following the acute stage, it is necessary to attend particularly to the symptoms by which it is distinguished, as the mode of treatment is very different from that which is required in acute inflammation. The symptoms of chronic differ from those of acute inflammation of the conjunctiva rather in degree than in kind; so that after they have existed for some time in the acute stage, you find the disease gradually passing into the chronic stage. The redness will be less intense, the pain which accompanied it less acute, the intolerance of light will be less, the chemosis and swelling will be diminished, the effusion of tears less considerable, the constitutional irritation will in a great degree have subsided, and, in short, all the acute symptoms will be much mitigated. There will still, however, remain a considerable degree of irritability in the eye, on exposure to light; some artificial defence to exclude the light will be necessary, and the person will still be incapable of applying the organ to the ordinary purposes of vision. The cause of chronic inflammation, both exciting and predisposing, are very similar to those of acute inflammation, and indeed I have already said that one form very commonly passes into the other; but at the same time it is to be remembered that there are many causes which tend to produce this inflammation, accompanied with atony and debility in the very outset, which distinguish it from acute ophthalmia. Chronic

inflammation of the conjunctiva is very apt to take place, where the patient has for a long time been labouring under disorder of the digestive organs. Patients who have this form of the inflammation often complain of dyspeptic symptoms; such as uneasiness about the scrobiculus cordis; distention of the stomach after eating; flatulence, disagreeable tastes in the mouth, bitter, sour or putrid; furred tongue, and other symptoms indicating derangement of the digestive organs. Inflammation of this kind is very apt to arise from, or to be kept up by, exposure to acrid fumes or smoke in particular trades. It is not unfrequently the concomitant of dentition, the measles, or small pox; it sometimes accompanies rheumatism and gout. Frequent intoxication and various other causes may predispose to it, which it will be necessary to investigate carefully, because the mode of treatment will materially depend upon them, as I shall have occasion to show you in another part of the lecture.

In general, inflammation of the conjunctiva is a very manageable complaint. It passes into chronic inflammation after the acute stage has continued for a certain time, and it not unfrequently subsides of itself. A spontaneous cure, however, is by no means to be depended upon, and we ought on no account to neglect or relax in the proper mode of treatment, from any reliance upon such a cure; because simple inflammation of this membrane may lead to inflammation of the deeper-seated tunics of the globe of the eye; suppuration may be induced, the organ may at length become permanently disorganized, and the sight of the eye irretrievably lost. The consequences of inflammation of this membrane are very similar to those of inflammation in other parts of the body. It sometimes terminates in effusion, the serum or blood under the conjunctiva rising in a roll above the transparent cornea. It sometimes produces the adhesive process; and when it terminates in this manner the adhesive matter is deposited under the conjunctiva, which covers the transparent cornea, and is recognized by a hazy appearance at the part. The adhesion is various, both in its extent and quantity; it is sometimes so slight as only to produce a simple clouded appearance over a certain part of the cornea, which is technically called nebula; it is at other times more considerable in quantity, and produces an appearance of considerable opacity in the cornea, which is usually called albugo, or leucoma. The deposit of matter is sometimes confined to a simple speck, and is sometimes spread more or less over the whole surface of the cornea, so as to interrupt or intercept vision altogether. The inflammation sometimes proceeds to the suppurative process; indeed the tunica conjunctiva appears to be of a nature very analogous to the mucous membranes of the body, and like these,

is exceedingly prone to the suppurative stage of inflammation. The suppuration generally proceeds from the surface of the conjunctiva, as from the surface of any mucous membrane in a state of inflammation. In other instances, the formation of pus is circumscribed; a deposit of lymph takes place where the conjunctiva covers the cornea, or in its immediate vicinity, and a little abscess or pustule arises from the centre. Ulceration is also sometimes produced: this usually occurs in the cornea, in consequence of laying open this pustule, probably from the denudation or exposure of the cornea. Lastly, sloughing and mortification of the cornea is not an uncommon effect of a high degree of suppurative inflammation. The same consequences, therefore, occasionally arise from inflammation of the conjunctiva as from inflammation in other parts of the body; namely, effusion, adhesion, suppuration, ulceration, and mortification. As the most serious consequences, therefore, often follow from simple inflammation of this membrane, let us consider the mode of treatment which we ought, under such circumstances, to pursue.

OF THE TREATMENT OF SIMPLE INFLAMMATION OF THE CONJUNCTIVA.

It will be necessary to adopt at once, with vigour, the antiphlogistic plan of treatment. As the best mode of diminishing the action of the heart and arteries, the use of the lancet should be freely resorted to, in the commencement of inflammation of the conjunctiva. You ought not to be satisfied with taking away a certain quantity of blood; as, for instance, eight, ten, or sixteen ounces; but you should in this, as in all other cases of acute inflammation, accompanied with hardness of the pulse, make a free orifice in a large vein, and take away a quantity of blood, until some manifest effect is produced upon the action of the heart and arteries; keep your finger on the pulse of the patient, in order to ascertain how the heart is affected, and carry on the bleeding even to faintness. This may prevent the necessity of again having recourse to the lancet; or if it should be necessary to do so, blood may be taken away in much smaller quantities. You will, of course, be guided by the státe of the patient's pulse, as the only certain criterion; and when this is diminished, leeches may be afterwards conveniently applied.

The application of leeches, in the first instance, except in large numbers, is seldom sufficient in acute inflammation; three or four leeches will scarcely produce any effect upon it. Opening the temporal artery is another mode of bleeding, which is attended with very good effects in this inflammation. This practice has been decried by some persons, who suppose that by opening the temporal artery you force the blood to

pass through the anastomosing branches, and in this way throw more blood into those vessels which are immediately distributed to the eye. Whether this be the case or not I am not prepared to determine, but I have certainly seen good effects from opening the temporal artery in this inflammation, and I am therefore often inclined to adopt this practice. Some practitioners recommend the practice of dividing the vessels of the part by scarifying the conjunctiva. This is a practice, however, which I do not recommend: the quantity of blood taken in this way is small; the irritation produced in performing the operation is considerable, and the clots of blood left after it often excite or keep up inflammation of the conjunctiva. Great benefit is derived from treatment directed more especially to the body at large; such, for instance, as diaphoretic medicines. The tartrite of antimony is a very useful medicine of this kind; perhaps there is no medicine which, after blood-letting, tends so effectually to keep down the action of the heart and arteries. It should be given in such doses, and repeated at such intervals, as to keep up a state of nausea. Purgative medicines are thought by some persons to be not at all necessary in this inflammation. Richter, a very valuable writer on surgery, is of this opinion; and I am quite surprised at it, for much benefit will undoubtedly arise from evacuating the bowels of any accumulation of feculent matter. Constitutional irritation will be materially abated by keeping up the secretions from the intestines, and, in many cases, by altering and rendering them more healthy. The bowels should therefore be freely acted upon by doses of calomel, combined with jalap, scammony, or cathartic extract; and the effects of these medicines should be kept up by the exhibition of neutral salts, so as to produce a considerable number of watery stools. At the same time the diet of the patient should be low, and he should be kept in a state of perfect rest and quietude. When an impression has been made in this way on the symptoms, it will then be proper to adopt other plans of treatment; for instance, where blood has been taken to a considerable extent, the application of a blister to the nape of the neck will be attended with beneficial effects. The treatment of the part is also to be considered; the head should be kept raised, so as to favour a return of the blood from the eyes, and the access of air or light should also be prevented by keeping the room darkened. When I say that the access of air should be prevented, I do not mean that the room should not be kept well ventilated, for this is a very material point, but only that the patient should not be exposed to variations of temperature. With respect to local applications, I believe it will in general be found that moist warmth is most agreeable to the patient in acute inflammation of the conjunctiva. This may be applied in the way of fomentations,

either by means of tepid water, or decoctions of marsh-mallows, poppy-heads, or camomile flowers. Where there is much irritability, steam will often be found useful, and especially the steam of water in which opium has been infused, from which the patient will experience great relief. Some persons recommend a sort of poultice, although from the tumefaction of the lids, this is an application which cannot be very conveniently used. The poultice, of course, is not of the ordinary description; it is generally made of camomile flowers, boiled so as to be rendered extremely soft, and put into a gauze or muslin bag, which should be applied so as to make a very slight degree of pressure on the eye. If poultices are employed, they should be very frequently changed, for otherwise they are very apt to confine the secretions, and rather to keep up than diminish irritation. Fomentations, however, such as I before described, are greatly preferable. Many persons prefer cold to warm applications; if cold applications are employed, care must be taken that they do not stimulate the part. The choice of cold or warm applications should depend entirely on the feelings of the patient; if he do not find relief from warm, you should then try the effect of cold applications. I have found, however, that in general moist warmth has a tendency to produce relaxation of the vessels, and to favour the passing of the acute into the chronic stage of inflammation. Warm applications, however, must not be continued when the chronic stage has commenced, for they would then do mischief instead of good. On this account, you should observe attentively the change of the inflammation from the acute to the chronic stage, that you may alter your plan of treatment as soon as the latter stage has commenced. In the chronic stage the evacuating plan may, to a considerable extent, be laid aside; the diet, though still not stimulating, may be more generous; there will be no necessity for continuing diaphoretic medicines, as the skin will generally be sufficiently moist, nor will it be necessary to evacuate the bowels so freely, though attention should be paid to their due action; alterative medicines will often be found beneficial. The local application should be of an entirely different character; they ought to be moderately astringent and stimulating, as your object now is to excite some degree of action in the vessels, and to get rid of their relaxation and atony, care being taken at the same time not to stimulate the parts too much. Various collyria or eye-waters are used for this purpose; all of them moderately astringent or stimulating; such as the solution of alum in water, solutions of the sulphate of zinc, or the sulphate of copper, or the liquor plumbi subacetatis. These solutions should at first be very much diluted; ten drops of the liquor plumbi subacetatis may be added to four or six ounces of water; a grain of alum, or

half a grain of the sulphate of zinc or copper, may be dissolved in an ounce of water. The solution should be gradually strengthened, in proportion to its action on the part and the degree of stimulus which may be required. To judge how far the stimulus may be carried, the criterion is exceedingly simple; if you find that a certain degree of smarting and pain is produced, which soon subsides, and leaves the patient much more easy than before, you may be convinced that the collyrium is beneficial; if, on the other hand, the patient experiences a great degree of pain, which does not subside speedily, and the vessels become turgid, you may be assured that the collyrium is doing harm, and that the quantity of stimulus ought to be diminished. The best mode of applying an eye-wash of this kind is to inject it by means of a silver or ivory syringe, introduced under the lids every two or three hours. In this way you may be certain that the solution is diffused over the whole surface of the conjunctiva. An eye-cup will answer the purpose very well, if the patient, after immersing his eye in the cup, has the courage to open it. The syringe, however, is a more manageable instrument. Mr. Ware recommended, in chronic ophthalmia, what in the old pharmacopœias used to be called tinctura thebaica. The vinum opii will answer the same purpose, and seems to be one of the best stimuli which can be employed in chronic ophthalmia; it acts as a mild astringent, and at the same time, by its soothing quality, sheathes the effect of the stimulus, so that no pain is produced. It may be right, in speaking of collyria, to say that I have found patients able to bear them stronger when the chill is taken off from them; the warmth of the application seems to take away the pain, while the effect remains the same. The vinum opii may be employed in the quantity of one drop, or even of two or three drops, two, three, or four times a-day. It will be best to drop it into the inner canthus of the eye, with a camel-hair pencil; the patient should then shut his eye, and move it about, so that the fluid may be diffused over the whole surface. I have seen this application used two or three times a-day, and in the case of children, sometimes only once a-day, with the most decided benefit. There is another circumstance which should be attended to in the treatment of chronic ophthalmia, namely, not to exclude the light so much as in acute ophthalmia. If the patient can bear a moderate degree of light, it should be freely admitted. He should wear no bandages, and have no other protection than a shade. Continued darkness and heat are very apt to keep up a morbid state of sensibility and irritability in the eyes. Lastly, with respect to the treatment of chronic ophthalmia, I have already stated various causes which predispose to, in some instances excite, and in many keep up, this state of the complaint. You must give, therefore,

conjointly with those remedies which I have just pointed out, others to act on the morbid state of the constitution which keeps up the local irritation, and your success in the treatment of this inflammation will very materially depend on the accuracy with which you investigate the causes to which I have adverted, and the judgment with which you apply the remedies.

I shall now proceed to consider the suppurative form of inflammation, producing,

PURULENT OPHTHALMIA.

Suppurative inflammation of the conjunctiva is the most severe form of inflammation in that membrane. It is exceedingly acute, very rapid in its progress, and often very destructive in its ultimate effects. This form of the complaint requires very active treatment. The symptoms are so manifest that there can be no doubt of the nature of the complaint, its prominent character being the formation of a considerable quantity of purulent matter. In other respects the symptoms are not very different from those which characterize inflammation generally. The patient at first feels an uneasy sensation about the eyes; next some degree of pain on the admission of light, which increases to a considerable intolerance of light. Redness of the vessels is observed, and besides this, a greater degree of swelling than commonly attends simple inflammation. The eye-lids soon become much swollen, the conjunctiva, where it covers the fore part of the globe of the eye, is tumid; there is considerable chemosis, and often such turgescence of the upper lid as to prevent the patient from raising it. The lids are often so much tumefied as to become everted, so that a sort of roll of the lid is formed. These are the symptoms which precede the discharge of matter. A fluid first appears which is not opaque, and has the character of tenacious mucus; in the course of twenty-four hours it assumes the appearance of pus. It is thick, yellow, sometimes green, and poured out in considerable quantity. The appearance of the tunica conjunctiva has been not inaptly compared to the fœtal stomach, when injected. It has the appearance of a villous membrane highly injected with red blood, and certainly very nearly resembles the internal surface of the fœtal stomach when highly injected. If you examine it with a glass, you will see drops of pus oozing on the surface, and collecting there in considerable quantities. The acute stage of purulent ophthalmia is of very short duration; it has a tendency to pass rapidly into the atonic stage, in which there is action without power, and congestion of the vessels of the part. At this time the violence of the acute symptoms is mitigated, but the patient labours under considerable prostration of strength.

Purulent ophthalmia has a great tendency also to terminate in sloughing. The cause of this tendency it is perhaps not very easy completely to explain; Mr. Travers thinks that it is produced by a constriction of the small vessels distributed to the part of the cornea, in the same way as sloughing of the glands is produced in paraphymosis by the cutting off of such vessels. Sometimes the sloughing commences in a small portion, and gradually lamella after lamella is destroyed, until the aperture assumes a funnel-like shape; at other times a slough forms in a considerable portion of the cornea at once, and opens into the anterior chamber. The commencement of the sloughing process may be recognized by a haziness of the cornea, which soon amounts to considerable opacity. When you observe a dark appearance beyond the ulcerating parts running from the deposit of lymph so as to form a surface from which the chasm is to be filled up, you may regard this as a favourable sign that the sloughing has here found its limit. The case is not to be regarded as hopeless when sloughing of the cornea has commenced, for if the opening be only small, the common effect is that the aqueous humour will escape; the iris will become prolapsed into the aperture of the cornea, but the patient may afterwards recover, and though the shape of the pupil will be altered, he may still retain a considerable degree of vision. When the opening is large, the iris will not only be prolapsed, but protruded; not only the aqueous, but the crystalline, and the vitreous humours will escape, and the sight of the patient will be irretrievably lost. The causes of purulent ophthalmia are various; it is often occasioned by the violent degree of inflammation produced by some highly irritating substance, such as caustic lime. It occurs occasionally in new-born children; in this case it is doubtful whether it arises from the first exposure of the eye to the light, or, as is commonly supposed, from the application of the vaginal secretions to the eyes of the child on its passage into the world. It generally takes place in the first week or month after the birth of the child, and seldom later than three months.

Another, and one of the most violent forms of purulent ophthalmia, is that which is called gonorrhœal, from its being produced by the application of gonorrhœal matter to the conjunctiva. This of all others produces the most intense degree of inflammation. It may be readily traced to the cause I have just stated, in consequence of the person labouring under gonorrhœa inadvertently using a towel, or anything to which the gonorrhœal matter has been applied, and thus conveying it to the part. I am aware that this inflammation has been stated, upon what may be considered good authority, to be a metastasis of the gonorrhœal symptoms from the urethra to the conjunctiva. I have never, however,

seen a case in which I could entertain the least suspicion that the complaint was produced in that way, and I do not think that there is sufficient evidence to establish such an opinion. There is another form of ophthalmia, which has been called the epidemic, or Egyptian; epidemic, in consequence of its attacking a number of persons at the same time in particular districts; and Egyptian, because it resembles that form of ophthalmia with which our troops were attacked in Egypt in the year 1801. This disease was, however, well known in this and other countries long before our soldiers went to Egypt, and it has taken place in districts where there could be no possibility of communication with those soldiers. There can be no doubt that it arises spontaneously, and often attacks epidemically a number of persons in the same district. How it arises it is difficult to say; it was supposed to be produced in Egypt by the combined effects of heat and dust; but it is doubtful whether it may not rather arise from some particular state of the atmosphere with which we are not perfectly acquainted. I have only in conclusion to speak of the

TREATMENT OF PURULENT OPHTHALMIA.

If the lancet is to be used in any kind of ophthalmia, it is more especially to be used, not only boldly, but very early in this. It may be said, indeed, that unless some decided impression is made on the symptoms in the first twenty-four hours, we shall be unable afterwards to check the progress of the disease. It will be necessary, therefore, to push blood-letting to a very considerable extent, in an early stage of this inflammation. Topical bleeding, by the application of leeches, is quite out of the question in this complaint, except in the case of children. Blood should be taken in large quantities from the arm of the patient. The army surgeons, who have had the most extensive opportunities of witnessing this form of the disease, all concur in the utility of copious bleeding. All the other antiphlogistic remedies, which I before enumerated to you, are to be put in practice in this case. Purgatives should be administered so as to produce a considerable quantity of watery stools; diaphoretic medicines, and especially the tartrite of antimony, in doses of ¼ or ½ a grain, should be given at such intervals as to keep the patient in a state of nausea, and topical applications should be employed very much in the same manner as in simple inflammation. During the first stage of the complaint, moist warmth in the form of fomentations and poultices, such as I have already described, will be found beneficial. The acute stage, however, is of very short duration, and they are not to be continued beyond that period. The extent to which the antiphlogistic plan should be pushed must vary,

according to the violence of the complaint and the constitution of the patient. Young, robust, and plethoric patients will bear depletion to almost any extent; on the other hand, you must proceed with more caution where the patient is of a weakly, debilitated, or irritable habit of body. You must not, however, be deterred from adopting an active plan of treatment until you have produced a manifest effect on the system of the patient: until the pulse becomes soft; the skin moist; the pain, swelling, tension, and throbbing of the eyes considerably abated; the chemosis diminished, and in fact all the acute symptoms more or less subdued. When this is the case, if you should be called to the complaint in an early stage of it, the subsequent treatment will in general be very easy. It often happens, however, that we are not called to this complaint until it has arrived at the chronic stage, when the conjunctiva is feebly pouring out pus, the pulse depressed, the skin cold and clammy, the countenance sallow, and when the constitution has materially suffered from the progress of the disease. In this state, an entirely different plan of treatment will be required. Gently stimulating applications should be employed by means of a syringe, so as to cleanse the conjunctiva, and free it from the pus which has collected on its surface, and at the same time stimulate the relaxed vessels. In general it will be necessary to employ tonic remedies, such as bark, for instance, always attending to the due action of the bowels, without which tonics would be useless, and even injurious, to the patient. To children, bark may be given in the form of extract, to the extent of from two to five grains, two or three times a-day. The eyes should not be bandaged, nor should the matter be allowed to collect; cleanliness is of great importance in the treatment of this form of the disease. With respect to the treatment of the sloughing cornea, some nicety will be required. When you have ascertained that the sloughing process is commencing, from the hazy or opaque appearance of the cornea, the antiphlogistic must be changed for a gently stimulating and tonic plan of treatment. Weak astringent collyria should be used to favour the throwing off of the sloughs. Observe the process of the sloughing from time to time: if there is a firm layer beneath, the patient is going on well, but if the sloughing has a flocculent, soft, ash-coloured appearance, in addition to mild stimulants to the part, you should employ tonic remedies, such as bark. In the treatment of purulent ophthalmia, it is of great consequence to pay strict attention to the changes which take place in the symptoms, so that neither the depleting nor the tonic plan may be blindly continued. The treatment should be regulated by the violence of the symptoms, and by the changes which take place as the disease passes from the acute to the chronic form. The errors in the

treatment of this complaint may be comprised in two words; they consist either in continuing the depleting plan too long, or in not resorting to it sufficiently early. If the antiphlogistic plan be not adopted at a very early stage of the disease, the tonic treatment will afterwards be of no service; and on the other hand, if you continue the depleting plan too long, you will check the restorative process, and the beneficial effects which nature would otherwise assist in producing.

LECTURE XXXIII.

ON STRUMOUS OPHTHALMIA.

STRUMOUS, or scrofulous ophthalmia, is so called, because it is met with in those persons who are of a scrofulous diathesis—it occurs in children, and not unfrequently in adults. The inflammation is of the atonic character, that is, if I may be allowed to use a solecism, it is chronic from the commencement, it is one of atony from the beginning; and the reason why it is necessary to speak particularly of this complaint is, because there is one symptom invariably present—intolerance of light. The patient cannot bear the least access of light; there is great difficulty of opening the lids, the orbicularis palpebrarum appears spasmodically contracted, and so difficult is it for a patient to open the eyes, that he can seldom do it: an adult may have sufficient resolution, but it is necessary that the eyes should be opened. The only way in which this can be done, is by fixing the head of the patient, when it is a child, between your knees, with the fore-finger of the one hand to raise the upper lid, and that of the other to depress the lower, which will give you an opportunity of seeing the eye; but in doing this, great caution will be required to prevent eversion of the under lid, or any undue violence to the part. When you examine the conjunctiva, you will be surprised to find how little it is inflamed, though the child does not raise its head from the mother's lap. I say that it will be necessary to examine the eye frequently during this state. Disorganization of the different parts of this organ often take place; the cornea, or rather conjunctiva covering it, becomes covered with an opaque capsule, with vessels shooting over the cornea, so as to give it an herpetic appearance; that is, there will be seen over the cornea yellow spots, which are deposits of lymph. These open into small ulcers, which are streaked with vessels carrying red blood. The eye becomes very painful, and extremely irritable, and there is often, in this state, intense redness of the conjunctiva. Under these circumstances, similar ulcers form in different parts of the cornea. The formation of these ulcers produces all

the symptoms of acute inflammation of the eye, and the organ not unfrequently becomes slowly and gradually disorganized. So long, however, as the cornea continues bright, and of its natural colour, there will be no danger to be apprehended from the formation of ulcers. But it is of the greatest importance that the cornea should be narrowly watched, as, if the inflammation continues for a long time, ulcers are very apt to form on it. But the most distressing symptom, and the one about which the patient expresses the greatest uneasiness, is the intolerance of light.

TREATMENT OF STRUMOUS OPHTHALMIA.

I have said that the inflammation is one of the atonic kind, yet there exists considerable irritation. Depletion must be had recourse to, but not to any considerable extent: it will be right to apply leeches, but certainly blood-letting should not be pushed too far, and throughout the whole treatment it will be necessary to keep in view the nature of the constitution which is generally met with in scrofulous subjects: it is languid and debilitated; the digestive organs are deranged; there is loss of appetite—tongue white and furred; bowels torpid; secretions defective in quantity and in quality—skin dry and hot; in fact there is a good deal of fever present. The mild depleting plan must be first adopted, regulated as far as the constitution will bear it: you must remove the symptoms of irritation; open the bowels freely by calomel purges, repeated more or less frequently as they improve the secretions. Alterative mercurial medicines should then be given, and if necessary they should be combined with rhubarb and magnesia, but not so as to produce watery stools.

When the fever becomes diminished, the bowels perform their natural functions, the tongue looks clean, and the skin assumes its healthy feel, you may begin with tonic remedies. Aromatic bitters, combined with alkalies, will be found useful remedies. But at the same time you must amend the state of the constitution by attention to regimen and diet. The food should be light and nutritious, clothing warm. Exercise should likewise be taken; not to such an extent as to produce febrile excitements, but to invigorate the health. Sea-bathing will be of advantage; and when the constitution is not in that state to bear the cold-bath, the warm should be used; and if the patient is in a situation where sea-bathing cannot be resorted to, he should sponge himself with tepid water, gradually accustoming himself to the use of cold; by this means the general health will be much improved. As for the treatment of the part affected, it will be right to employ depletion at the onset, as far as the application of leeches. It will be proper also to apply blisters

behind the ears, or to the nape of the neck; and blisters in this complaint are no ordinary remedy. You will be surprised to find, after the application of a blister, how soon the intolerance of light will vanish, even in children; their disposition will rapidly alter, and the inflammation be so slight, that you can actually open their eyes without any trouble. Warm and moist applications are beneficial; the steam of water containing opium allowed to go on the eyes will be good. About a drachm of opium dissolved in a pint of hot water, and the steam of it directed over the eye, will relieve, to a considerable degree, the irritation. But if any of these applications be used at the onset, they must not be long continued before recourse is had to mild astringent collyria. Their strength must be regulated by the feelings of the patient; not so strong as to irritate, but to be followed by relief to the part affected. The vinum opii is a remedy particularly adapted to this complaint at an advanced stage: it tends considerably to lessen the irritability of the part, and to increase the strength of the relaxed vessels. At the onset, however, a more active plan of treatment must be adopted: relief must be sought by the application of leeches and blisters, more especially by the last. It will be necessary sometimes to give mercury so as slightly to affect the mouth, remembering the state of the constitution in scrofulous persons, and taking great care that it is not pushed so far as to affect the general health.

Another form of inflammation of the eyes, nearly allied to the one I have just been describing, because it is in general a consequence of it, is

PSOROPHTHALMY.

Psorophthalmy is an inflammation particularly of that part of the conjunctiva which lines the lids, but it extends sometimes over the whole of the conjunctiva covering the globe. This complaint is often obstinate, and extremely difficult of cure: it extends over the cornea, conjunctival lining of the palpebræ, the cheek and nose; and, lastly, the globe of the eye becomes affected, if this complaint be not checked. At the origin of this disease, there is a glutinous matter secreted on the edge of the lids; ulcers form; and there is often great difficulty in separating the lids from one another. By this means matter lodges on the lids, and tends to keep up the irritation of the whole of the part. You not unfrequently see the redness extending down the whole of the cheek, and excoriation taking place on the cuticle. If the inflammation spreads over the whole of the conjunctiva, the lachrymal sac becomes irritated, and effusion of tears over the cheek takes place on the surface of the cheek. The inflammation is of the atonic kind, accompanied with that symptom distinguishing strumous ophthalmia, intolerance of

light, and a feel as if there were some extraneous body in the eye, grit or sand, which gives rise to an effusion of the tears. The lids are very red on the edges, and there is an incrustation of matter on them. There is occasionally a contraction of the integument of the lower lid, by which it becomes depressed and everted. In this inflammation the secretion deposited from the lids dries up, ulcers form, small briny incrustations are formed, and there is an appearance of tinea on the lids. The watery part of the secretion from the lids is evaporated, which leaves the incrustations that keep up the irritation and form small ulcers. In consequence, an alteration in the figure of the tarsi occurs; there is a contraction of the cellular membrane just beneath the lower palpebra, and eversion of that lid. This affection of the eye is of difficult management, and is frequently found in persons of a scrofulous diathesis, in children of large towns who are ill fed and worse clothed, with little attention paid to cleanliness. The complaint is very obstinate in its cure; and if relieved, it generally returns, and becomes as bad as ever. It is not, however, confined to the lower classes, but the higher and middling ranks of society are sometimes attacked with it—those who are of a scrofulous diathesis. In schools also it will be found; it frequently arises from the irritating matter being applied to the lid, which may be conveyed from one to another by using the same towel, or in some such way. The treatment of this complaint does not essentially differ from that of the strumous; it is an inflammation without power, one of the atonic kind. Depletion must not be pursued to any extent. It will be right when any symptoms of irritation are present to remove them by the application of leeches, and opening the bowels. Drastic purgatives must not be exhibited, as they do not answer the object which it is intended to effect; mild aperients, combined with mercurial medicines, such as calomel, the hydrargyrus cum creta, or the blue pill, and in quantities so as to give tone to the system. When any febrile excitement that may have existed is removed, begin with tonic remedies; that is, when the skin has its natural feel, and the tongue is clean, and the secretions from the bowels are regular in their quantity and quality. The applications to the part should consist of mild stimulants, and the best form in which they can be exhibited is that of ointment. The briny incrustations on the edges of the lid, and which are secreted from the meibomian follicles, confine the lids so closely together, that in the morning when the patient awakes they have the appearance of being glued together. This leads to produce increased irritation on the edges of the palpebræ. To prevent this the lids are to be besmeared with some ointment. The one commonly used is that called the citrine ointment, the unguentum hydrargyri nitratis:

but it cannot be well borne of the usual strength, and therefore is diluted with one-third, or one-half, or perhaps more than this, of unguentum cetacei, and this is applied with a camel-hair brush twice a day, the incrustations of matter being carefully washed off before its application, and then some of the ointment is to be besmeared along the edges. The unguentum hydrargyri nitrico-oxydi is used for the same purpose. In fact, any of the milder stimulating mercurial ointments will do. The application will be required to be varied, and the degree of strength must be regulated by the effect on the eye. The use of the vinum opii will be attended with beneficial results, and the application of blisters will have an universally good effect. In the use of blisters, however, in this complaint, as well as in strumous ophthalmia, no advantages will be derived from keeping them open; for when this is done, they are apt to give rise to fresh irritation. Therefore, after the application of a blister, you should desire it to be healed; and, if necessary, direct a fresh one to be applied. By this means the irritation in the eyes will be relieved, and their employment be attended with advantage.

The consequences of inflammation of the eye requiring distinct notice, and which are accompanied with equal or less inflammation of the conjunctiva, and kept up or excited by attendant circumstances, are now to be spoken of. In the first place, we shall treat of

NEBULA.

This complaint is so called from the nebulous or cloudy appearance of the transparent part of the eye, which is produced by deposits of lymph into the conjunctiva covering the cornea. The membrane or layer stretched over the cornea will vary according to the more or less relaxed state of the vessels of the conjunctiva, which will be seen carrying red blood to the part. The veins corresponding to the nebulous parts will become turgid and prominent. If there be considerable inflammation, it must be removed by active means; and in these cases it will be proper to deplete. The inflammation, however, is generally of the chronic kind, and arises from a relaxed state of the vessels, which require stimulating applications, in order that they may recover their tone, and convey the blood uninterruptedly. If the vessels be stimulated, the blood will be likely to flow through the veins; the absorbents will be excited, and remove the effused lymph. By stimulating applications, the cornea will frequently be restored to the same state of transparency as before the attack. Care must be taken that in the treatment no undue degree of stimulus be employed; if there should be inflammation it will be increased, and the complaint be as bad or worse than ever. A collyrium that may be used, is one with the sulphate of

zinc, containing about a grain to an ounce of water, gradually increasing it in strength. One which has been recommended, is that with the corrosive sublimate, with a grain to an ounce of water. Calomel or levigated sugar has been used in many cases with good effects. This is quite an old woman's remedy, and has been recommended very indiscriminately. Unscientific persons—those who are not acquainted with the nature of the disease in which it is useful—seeing it do good in one complaint, think it will in all others of a similar appearance, though essentially different in their character, and therefore employ it in cases where it does harm, using it alike in a cicatrix from ulceration as in nebula arising from a deposit of lymph. In the one, if it be employed, loss of substance will be the result—inflammation will be excited, and fresh ulcers will form. In the other, that is, in nebula, it will often be of service, care being taken not to produce an over degree of stimulus in the part.

PUSTULES.

Pustules are generally seated at the junction of the transparent with the opaque cornea; but they may sometimes occur in the cornea itself, or the conjunctiva covering it or the ball. They are seated in different parts. The appearances that they present at first are red or yellowish spots arising from a deposit of lymph in those parts, and are slightly elevated. There is considerable turgescence of the vessels around them. If they occur on the cornea, it will be nubelous and opaque; the vessels round the cornea will be seen distended, carrying red blood, and having a radiated disposition. If the lymph be not removed by absorption, the pustules break, matter escapes, and ulcers form in their place. Sometimes there is only one of these ulcers, frequently two, one at each side of the cornea, just at the junction of the transparent with the opaque cornea, and occasionally the cornea is even encircled by them. Although the inflammation accompanying the formation of pustules is not acute, yet it frequently happens that there will be more or less pain on moving the eye, intolerance of light, and effusion of tears. These ulcers are difficult to manage, as they often occur in the scrofulous habits of body and broken-up constitutions, and are apt to become chronic, and consequently difficult of cure. When the healing of the ulcers takes place, and the same state of body continues, they are soon reproduced, and the disease is greatly aggravated. As for the treatment this affection requires, it will be hardly necessary to say, that if considerable inflammation exists, depletion must be employed. The inflammation, however, is of the atonic kind. First apply leeches, but not in large numbers, so as not to carry depletion to too great an extent:

it will be proper to evacuate the bowels, not by drastic purges, but mild aperients, and to attend to the secretions. Blisters will be useful, if the sight be affected. When the state of the bowels has been regulated, you must begin with tonic remedies, and as early as possible with mild astringent collyria, and the best is the vinum opii. The only point to guard against is, that depletion be not pursued to too great an extent at the outset. The system must be invigorated by tonic remedies, and tone given to the vessels of the part.

The next affection to which I shall direct your attention, is the result of purulent ophthalmia, which is that called

FUNGUS OF THE CONJUNCTIVA.

This appearance of the conjunctiva occurs in diseased subjects. The conjunctiva becomes loose and red, the vessels turgid with blood, and there is a fold of this membrane on the inside of the lids, which produces considerable irregularity on its surface—a morbid secretion is kept up on the part—and not unfrequently eversion of the lids is the result. Extraneous bodies often enter the eye, and disturb it considerably. To prevent this, and remedy the complaint, the loose portion of the conjunctiva should be removed, which is a very easy operation. An assistant holding the lid, you, by the means of a pair of forceps, raise the fold of the conjunctiva, and with a pair of curved scissors remove it. As to the after treatment, you must keep down inflammation, should it appear, by the means already recommended.

There is another affection more frequently met with than this, viz.

GRANULATIONS OF THE CONJUNCTIVA.

These are nothing more than loose irregularities of this membrane where it lines the lids. These projections continue to pour out a portion of morbid secretion, which stimulates and irritates the whole eye; the palpebral conjunctiva becomes altered in its texture, and its surface is covered with fleshy elevation, having the exact appearance of granulations. These granulations covering the surface of the conjunctiva lining the lids are constantly rubbed over the globe of the eye whenever it moves, producing pain and irritation, and keeping up morbid secretion, and, in fact, giving rise to chronic ophthalmia. Thus easy access is afforded to extraneous bodies, nebulous opacities form on the cornea, vessels will be seen shooting over it, and these will be quite in a varicose state, enlarged, and having a knotty appearance. The granulations, if not removed or remedied, produce ultimate blindness. Considerable advantage is said to be derived from the following plan of treatment:—Remove the granulating surface of the conjunctiva by the lancet, or by a

pair of curved scissors. I am not able myself to say that I have seen any great good result from this mode of treatment. Touching the granulations with nitrate of silver or sulphate of copper will tend materially to keep them down. One remedy in this complaint was first mentioned to me by my friend, Mr. Tyrrell, who stated that he had tried it with advantage: the liquor plumbi sabacetatis applied to the surface of the granulations. The result of my experience has been to confirm this statement. If the vessels on the cornea be numerous, it will be proper to divide the trunks which supply them. This is a very simple operation. You must raise the lid and press on the globe, by which means you distend it and project it forwards; you then carry a sharp curved instrument round the outside of the cornea, and divide the vessels, so that they shall not reunite. A bar of lymph is thrown out, which turns the vessels from off their course, excepting perhaps, the small ones, which often reunite. It will be necessary, perhaps, to repeat it. Cases of this complaint are difficult to cure. These are remedies then to be used: removing the granulations, applying caustic applications, and the division of the varicose and enlarged vessels. These may be aided by setons, issues, and blisters, and attention to the general health.

ENCANTHIS.

This consists in an alteration of the structure of the caruncula lachrymalis, and neighbouring semilunar fold of the conjunctiva. The caruncula is enlarged; at the commencement it has a granulated appearance, which it loses as it increases, and then becomes similar to a hazel nut, being ash-coloured, and streaked with varicose vessels. This enlargement or excrescence prevents the lids from closing, and allows extraneous matter to enter, which keeps up inflammation of the eye, and it also presses on the puncta-lachrymalia, and turns them out of their place; the tears, thus prevented from getting into the lachrymal sac, are effused on the cheek. The best treatment is to remove it altogether. It is a simple operation, and is thus performed: an assistant raising the lid, by taking up the tumour with a pair of forceps, removes it with a pair of curved scissors with convex edges. When this complaint has not assumed the malignant form, it is always remediable by excision. Never operate, however, when the encanthis has become of the malignant kind, and put on the cancerous appearance. This will be known by the dull red colour of the excrescence, its excessive hardness, lancinating pains extending to the eye-ball and forehead, particularly when touched, foul ulcers, with irregular edges, having all the appearance of cancer in any other part of the body.

The last affection of which I shall speak is

PTERYGIUM.

This is all of the triangular shape, and may be divided into the membranous and fleshy. The first has the appearance of a thin film of minute vessels converging towards the cornea. The usual seat of this affection is towards the inner canthus, that is, with the base at the canthus and the apex against the cornea. It is always of a triangular shape, and the vessels proceed from the base to the apex. The fact is, that pterygia do not long exist before they produce a nebulous state of the transparent part of the eye by deposits of lymph, and then of fluid. The conjunctiva and sclerotic coat becomes loaded with vessels, and if this affection is not remedied, vision becomes impaired, and is ultimately lost. The fleshy pterygia differ from the membranous, and are more vascular. They first appear of a yellowish colour. Then the vessels running through them become large, and they have a red appearance; but always retain their triangular shape. When the disease has proceeded far on the transparent part of the eye, the only plan to adopt will be the removal of a part of the pterygium. This consists simply in raising the membrane as near as you can to the cornea, and cutting it through while suspended. When the pterygia are fleshy, more care must be taken in dividing them; they must be divided near to the margin of the cornea, and turned back from the apex towards the base.

There are a few other affections of the conjunctiva, but not of sufficient importance for me to detain you any longer this evening.

LECTURE XXXIV.

ON INFLAMMATION OF THE CORNEA.

At the outset, in inflammation attacking the transparent cornea, there is a hazy appearance, the cornea loses its natural lustre, and in a short time there may be discovered on its surface, vessels carrying red blood, and then the symptoms will be the same as those of inflammation in general; the patient will complain of intolerance of light, and also have effusion of tears. When the inflammation of the cornea continues, matter very frequently forms between its lamellæ, and the appearance which it then assumes is called *onyx* or *unguis*, from its resemblance to a nail; the matter is to be very distinctly seen in the transparent part of the eye, and gradually extends till it occupies one-third or fourth of the cornea. If you place the eye in profile, you can generally observe yellowish spots, which are usually seated at the anterior part of the cornea, and if you employ gentle pressure with a probe, the fluid may be felt

fluctuating within. In the various positions of the head, the matter does not shift its situation, but remains in the same spot. By proper treatment the matter often becomes absorbed, but it not unfrequently makes its way externally, or an opening is formed internally, and the matter then is effused into the anterior chamber of the eye. I shall defer speaking of the treatment of this inflammation till I have considered the next subject.

ULCERATION OF THE CORNEA.

This disease is the common consequence of inflammation of the cornea; but it is very frequently produced by the contact of matter in purulent ophthalmia, and the irritation of lime, or by any sharp-pointed bodies which may be insinuated into the cornea; or, in fact, any irritating substance, mechanical or chemical, that may be introduced into the eye. The inflammation produces the formation of pus—this breaks, and an ulcer is formed. In ulcers of the cornea you will find the edges rugged, uneven, and elevated, the ulcer itself having an ash-coloured appearance, and the patient complaining of great pain; there will also be a discharge of a good deal of acrid and irritating matter. In general there will be no difficulty in distinguishing ulcers of the cornea; all you have to do is to put the eye in profile, and take a side view of this organ, and you will see the ulcer with the appearances I have described. The situation of the ulcers of the cornea varies; very frequently they are at the superior portion, and affecting only the external lamellæ, in other cases spreading over the whole cornea, and penetrating into the anterior chamber, by which means the aqueous humour escapes, and the iris is often protruded; sometimes even the opening becomes enlarged, and the crystalline lens and vitreous humour escape. The ulcers vary in their appearance, some being large and others small, and those which are of small size, on cicatrization, do not materially obstruct vision, whilst those that are large, when healed, produce a nebulous appearance which destroys the power of sight.

Treatment of Inflammation and Ulceration of the Cornea.—The treatment required in inflammation of the cornea does not differ materially from that of inflammation of the conjunctiva, or any other part of the eye, and therefore it will not be necessary to recapitulate the means necessary to be adopted; you must rely on the efficacy of a strict antiphlogistic plan, and when the acute inflammation has been subdued, on the use of mild astringent collyria. When ulcers, however, form in any part of the cornea, it will be proper to use active means, if they be accompanied by acute inflammation; but most frequently they are accompanied by chronic ophthalmia, and have a disposition to spread rather

than heal. In these cases astringent lotions will be of great service; but of all remedies in ulcers of the cornea, the nitrate of silver is the one on which you are to depend; it is generally used in a state of solution, about two grains to an ounce of water, or it will be better to begin with a grain to an ounce, regulating the strength in proportion to the degree of irritation it may produce. Scarpa gives the preference to the caustic itself in the treatment of the ulcers of the cornea; the caustic is to be cut to a sharp point, and the ulcer to be touched with it. An eschar forms, which, in the course of two or three days, falls off, and the symptoms of the disease returns as before; the caustic is again to be applied, and to be repeated a third time, if necessary. The ulcer, by this means, loses its ash-coloured appearance, the edges become regular and even, and it rapidly heals. When ulcers of the cornea are attended by acute inflammation, it will be necessary to employ bleeding, by leeches, before the use of astringents, and at the same time to keep the bowels regular by mild aperients. During the progress of the ulcers, it will be necessary to watch them very closely, and examine them frequently, but in doing it great caution must be used lest the eye-lids become everted. When the ulcers heal, it is by cicatrization, as in any other part of the body, and afterwards specks are left which are nothing more than rounded spots of coagulable lymph, and are denominated *leucoma* or *albugo*; and in these cases the rays of light are not prevented entering the eye, except when the spots are on the axis of vision, and then they are interrupted.

The next disease to which the cornea is subject is

STAPHYLOMA.

In this disease the cornea becomes opaque, considerably elevated, and altered in texture. The eye-lids are prevented from being closed; there is perpetual irritation kept up by the friction of the palpebræ on the ball. This disease frequently comes on after small-pox, and is one of the sequelæ belonging to that formidable complaint. By the separation of the lids extraneous bodies often enter the eye; irritation is produced by the friction of the lids and eye-lashes—and thus a considerable degree of inconvenience is produced to the patient, and the eye kept in a state of chronic ophthalmy; and the sound eye becomes sympathetically affected.

In this disease the iris often protrudes; the vitreous humour is altered in texture; and the crystalline lens is projected forwards. In this complaint nothing can be done for the restoration of sight; and the only plan of treatment will be to remove the staphylomatous part, so as to return the eye within the orbit, and permit the use of an artificial eye.

The operation is exceedingly simple; the surgeon first passes a needle with a ligature through the staphylomatous part, in order to steady the eye, and then with the other hand takes the cornea knife, and removes as much of the projecting part as may be necessary. The operation gives little pain: it generally happens that the iris adheres to the cornea, and that portion of it is removed. The crystalline lens escapes, together with a portion of vitreous humour, and the eye collapses, so that, when the part is healed, an artificial eye may be worn. These are now made so much to resemble the natural eye, that they may be worn without the deception being detected. This is the only treatment that can be adopted with any relief to the patient. The cornea sometimes becomes conical, or of a conoid shape; in these cases the cornea loses its natural lustre—the sight becomes impaired. Glasses afford no relief to the sight in this altered shape of the cornea; nor is there any remedy with which I am acquainted that does. I have seen several cases of this kind, and have not known any good result from the treatment that has been adopted. Having considered all the affections of the cornea, I shall proceed to those of the other parts of the eye.

INFLAMMATION OF THE IRIS.

Inflammation of the iris, or, as it has been latterly called, *iritis*, is a peculiar and specific inflammation of the eye. The symptoms attending this complaint are in some cases with great difficulty recognized. In looking into the eye, you see the iris changed in colour, or having a brownish hue; or rather a reddish brown colour (this, however, varies according to the natural colour of the iris), from the increased number of vessels on its surface carrying red blood. The iris itself is altered in texture, being puckered and thickened. These appearances are soon removed, and deposits of yellow lymph, resembling yellow tubercles, will be seen on the iris; the pupil becomes irregular, and altered in shape, and the pupillary margin of the iris thickened, and turned back towards the posterior chamber. These then are the principal symptoms by which you recognize iritis; but, besides these, the aqueous humour becomes turbid, and the ciliary vessels on the surface of the sclerotic form a zone of vessels immediately surrounding the upper part of the cornea, which have a different appearance from those in inflammation of the conjunctiva, the latter having a tortuous course, whilst the others go in a straight direction. The conjunctiva partakes of the inflammation, and assumes a red appearance. The pain in the eye is not acute, but the patient cannot bear the light. There is also considerable constitutional irritation or fever, which may be known by the state of the pulse, and other symptoms. Inflammation of the iris often comes on

from very slight causes; it occasionally happens to those who have been under the influence of mercury, and in persons of a scrofulous diathesis, or when mercury has been pushed to an undue extent.

Iritis has, in consequence of its occurring so frequently after syphilis, been classed as a secondary symptom of that complaint: I have, I must say, considerable doubt on the subject, for I have never met with it in a person labouring at the same time under any other secondary symptoms of syphilis, with eruptions or nodes on the bones; and also I have never met with a case of iritis after syphilis, but when mercury had been previously given, and therefore I cannot say whether the inflammation of the iris was the effect of the mercury, or of the original disease for which it was given. Iritis is not unfrequently accompanied by inflammation of the tunics of the eye—what may be called *ophthalmitis*, or deep-seated inflammation of the globe of the eye. In this complaint the sclerotic appears reddened—the cornea is dull, and the capsule of the lens itself becomes opaque; all these participate in the inflammation. There is deposition of lymph on the edges of the iris, and there are also adhesions of it in some places to the crystalline lens. The sclerotic coat, however, is particularly inflamed; the vessels may be seen carrying the blood in a straight course, while those of the conjunctiva are tortuous. There is pain in the eye, intolerance of light; also these symptoms, together with a turbid state of the humours, are sufficient to inform one of the presence of inflammation of the sclerotic coat: the patient also labours, at the same time, under great febrile excitement. This inflammation is often attended by a disorganization of the organ. The result of this severe form of inflammation, if it be not checked, is effusion of lymph or matter into the anterior chamber of the eye, producing what is technically called *hypopium*. In these cases the matter may be easily observed, and sometimes there is so much as to conceal the edges of the pupil and the iris.

Treatment.—Of course the first part of the treatment will be, to relieve the irritation of the part by blood-letting, both general and local; and, in fact, all the steps of depletion must be adopted, as in other inflammations of the eye. But there is one remedy above all others in this complaint on which you are to rely, and that is mercury: it must be given so as to affect the constitution, till the gums and mouth are sore, or the saliva begins to flow, which will be the signs of it. In iritis, this medicine must be given, let whatever quantities may have been taken before. The best form in which it can be exhibited is that of calomel; let it be given internally after the bleeding, in the dose of two or three grains, combined with about a third or a quarter of a grain of opium, so as to prevent its acting on the bowels. In order that the

calomel may affect the system, it must be given every fourth or sixth hour, till the mouth is sore; in more chronic forms of this complaint it may be given less frequently. As soon as the system has become affected, you will see the zone of vessels disappearing, the lymph absorbed, the aqueous humour becoming clear, and the cornea losing its hazy appearance. Other remedies have been recommended, but there is not one on which you can rely but the exhibition of mercury. The belladonna will be found a very useful adjunct in this complaint; by dilating the pupils, the adhesions are often prevented from forming between the iris and capsule of the crystalline lens, and when they are formed it tends to elongate the adhesions. The belladonna should be applied, in the form of extract, around the eye, morning and evening.

AMAUROSIS.

By amaurosis, I mean partial or total loss of vision, arising from paralysis of the optic nerve or retina; and this is produced by a congestion of the vessels of the part, or minute alteration of its structure. The symptoms distinguishing this complaint are few, and therefore require to be well known. The pupil is generally dilated and motionless; the iris is nearly immoveable, acts very little, and vision is completely destroyed. There is also slight strabismus. In amaurosis. there is frequently the sensation as if a cloud were before the eye, which is termed *caligo*, and there is often a greenish appearance of the humours, which is named *glaucoma*. This depends on an alteration of the lens, or an alteration in the structure of the vitreous humour. The persons subjected to this complaint are those who have been in the habit of viewing minute objects, or exposing the eyes to strong light. Persons affected with amaurosis are frequently troubled with false appearances—as flashes of light, or balls of fire before their eyes. I shall divide the causes of amaurosis into three parts :—1st, Those which affect the retina or optic nerve. 2d, Those affecting the brain, or that part of it from which the optic nerves arise, the *thalamia nervorum opticorum*. And, 3dly, Those affecting the body at large, or some particular organ, and thus sympathetically affecting the eye.

LECTURE XXXV.

ON HUMOURS OF THE EYE.

In the preceding lectures, gentlemen, I have described the affections of the coats of the eye; this evening I shall proceed to treat of those of the humours of the eye. Very little, however, can be said of the

aqueous and vitreous humours, as most of the diseases to which the humours are subject, attack the crystalline lens, or its capsule; therefore, I shall chiefly direct your attention to them.

HYDROPHTHALMIA.

The aqueous humour is sometimes the subject of an accumulation which is known by the name of *hydrophthalmia*, or dropsy of the eye; and consists of an increased secretion of this humour. The symptoms of this complaint are—that the eye becomes more distended than natural; the cornea widened; the sclerotic coat attached to the cornea has a blue tint or cast; the sight is affected; the motions of the iris impaired; and the disease at last terminates in amaurosis. On what this complaint depends, it would be difficult to say; it is generally preceded by chronic ophthalmia.

Treatment.—The remedies recommended for this complaint are various, of the most opposite kind, and have been tried generally without any good effect. Puncturing the cornea, at a short distance from the sclerotic, has been tried, and it is said with success. I have, however, seen several cases of this affection, and no benefit whatever was derived from any means that were employed.

The vitreous humour is occasionally affected. There is sometimes a deficiency of this humour, arising from part of it being lost in the course of an operation; and the quantity lost is often so considerable, that the part supported by the aqueous humour is not sufficiently firm to keep up the natural roundness and plumpness of the eye. The medium of refracting the rays of light is destroyed, the sight becomes impaired, and glasses afford no relief.

There is the tremulous iris after couching, arising from the same cause as the preceding affection. Another change which takes place in the vitreous humour is that known by the name of

GLAUCOMA.

In this complaint the vitreous humour becomes altered in texture, more dense, and presents a sea-green hue, and the pupil is dilated. This disease has often been mistaken for cataract, and a person affected with it is frequently supposed to have a cataract in its incipient stage. On examining the eye minutely, this greenish appearance may be observed to be behind the crystalline lens, and posterior to the seat of the cataract; it may be, however, mistaken for many diseases, and has a greater resemblance to cataract than any other. Glaucoma remains without any change by which it may be distinguished from fungus of the eye, of which I shall speak to you in another lecture. The diag-

nosis is not difficult. Having mentioned the affections of the aqueous and vitreous humours, I come next to consider the different species of cataract.

CATARACT.

By cataract, is meant an opacity of the crystalline lens, or its capsule, the cataract depending on a morbid secretion of the liquor morgagni being very rare: this is an exception, but the ordinary definition is the one I have just given. This complaint seems to have been understood by Hippocrates; but the notions of Galen and those who followed him, respecting cataract, were very confused; and it was not till the end of the 17th, or beginning of the 18th century, that the nature of this disease began to be understood, when Mery and Maitre-Jean, and others, gave fair accounts of this complaint. The symptoms of cataract are unequivocal, and may be easily recognised. At first there is always defect of vision, and the patient sees things as through a mist, and requires a strong light to see them plainly; this symptom changes during the progress of the complaint, the patient being able to see better in a moderate than a strong light; and then a speck, or opacity in the lens or capsule may be distinctly observed; it is generally in the centre of the pupil, and at the situation of the lens; this gradually enlarges, and, in proportion as the opacity increases, the sight becomes more dim, and the capability of discerning objects diminishes. In the progress of the cataract, the patient can see better in a faint than in a strong light; and this is easily explained, because in the faint light the iris dilates, and the rays of light are transmitted through the circumference of the crystalline lens, which is not yet obscured. But you see these symptoms differ in the different kinds of this disease, and this leads me to consider the different species of cataract: it is extremely important that they should be known, as the operation that it will be necessary to perform depends on the kind of cataract which exists; but it is to be observed that the criteria are, to say the best of them, very fallible. On looking at a cataract, you cannot always be certain that it is of this or that kind, but on the whole you are enabled to give a pretty good guess. The symptoms characterizing each kind will be spoken of under the different heads.

DIFFERENT KINDS OF CATARACT.

There are four kinds of cataract: 1st, The hard or firm cataract; 2d, The fluid or milky cataract; 3d, The soft or caseous cataract; and, besides these, there is a fourth kind, the capsular cataract; the three first forming in the lens itself, and the last in the capsule. The last kind of cataract comes on after an operation, or in consequence of it, and is also found in children, when it is called congenital cataract. This

kind of cataract does not differ essentially from the other forms of capsular cataract, but is called congenital, on account of its occurring at a particular period of life, or children being born with it. This form of cataract also requires a particular kind of operation, and will be particularly spoken of. Of the lenticular cataract there are three kinds, the soft, fluid, and hard. These different kinds of cataract occur at different periods of life. It is stated that the firm or hard cataract is found in advanced age, whilst the soft occurs at an earlier period. There is one circumstance respecting these different kinds of cataracts it will be proper to mention: that is, it is not at all common for one form to go into another—for the soft to go into the hard, for instance, is exceedingly rare. I allude to an opinion which used to prevail, that a soft cataract became hard, and then it was said to be ripe. This idea is now given up, and experience proves it to be incorrect.

Let us now consider the different symptoms attending the different kinds of cataract.

FIRM OR HARD CATARACT.

In this kind of cataract the lens acquires a greater degree of density or firmness than natural; and in undergoing this change, it becomes smaller and thinner, and more concentrated. If you look at the cataract, you will see that it has not the natural whiteness of that complaint; it has a yellow or brownish appearance, the colour of amber. The next particular you observe is the interspace between the iris and front part of the lens, on account of the lens becoming thinner. The motions of the iris are free, there being no adhesions. There is generally some degree of vision, and the patient can often discern large and bright objects, and even differences of colour, and sometimes the shadow of minute objects. When the light is faint, the patient can see more distinctly than when it is strong. This kind of cataract generally occurs at an advanced period of life. By these symptoms, then, you will distinguish this kind of cataract:—by its colour and size the interspace between the front part of the lens and the iris: the vision being more or less distinct; and, lastly, by its occurring at an advanced period of life.

FLUID CATARACT.

This kind of cataract is always more or less fluid, and is called milky, from its white colour. The fluid cataract is not of equal density throughout. If you examine the eye of a patient with attention, you will see that it has a flocculent appearance, from specks or streaks consisting of solid particles of the lens, and these will move up and down in the various positions and motions of the head, and be removed out of

sight; but on the head becoming steady, they again appear. This arises from their gravity; on motion, they sink to the bottom, and of course disappear. There will not be any difficulty in recognising this form of cataract. Besides these symptoms, the lens becomes enlarged and globular; and the increase of size is such, that the lens reaches to the iris, so that there is no posterior chamber at all. If you look at the eye in profile, you will see that the iris is protruded forwards; from this pressure the motions of the iris are sluggish, and in some cases prevented altogether. The size and shape of the pupil is altered. The rays of light do not pass into the eye, and the patient can scarcely tell the difference between light and darkness.

SOFT OR CASEOUS CATARACT.

This kind of cataract is of the consistence of firm jelly or cheese. It is uniformly opaque, and there is a milky whiteness, as in the fluid cataract; but the spots and streaks sometimes observable in this form never shift their position, as in the other; the lens also becomes increased in size. The posterior chamber is obliterated. There is no interspace between the fore part of the lens and iris. The motions of the iris are performed with difficulty, from the size of the lens, and the rays of light are prevented from entering. The patients sometimes cannot distinguish between light and darkness; although they are seldom so blind as this.

MEMBRANOUS CATARACT.

This form of cataract is not connected with the lens, but the capsule itself. This opacity may exist either in the posterior or anterior layer of the capsule, or combined with that of the lens, and thus produce cataract. In this last case there is no distinct mark of diagnosis; but when the capsule only is affected, you may offer an opinion. If the anterior layer of the capsule is opaque, it has the appearance of being superficial and close to the pupil, and appears rather nebulous. It does not quite lose its transparency, but becomes semi-transparent. When the posterior layer is affected, this appearance is deeper; being at a considerable depth, and having more or less of a concave form. There are also striæ passing in a radiated direction. If you observe, then, the opacity deep-seated, and the lens appearing concave, you may know that the posterior layer of the capsule is opaque; but when this state is combined with opacity of the lens, the diagnosis will be difficult.

Another species of membranous cataract is, when the capsule becomes opaque, and the lens at the same time absorbed, and a tough, dense, membranous substance is formed, as in congenital cataract. These are

the different marks that I have to offer to you for detecting the different kinds of cataract; but you see, from the nature of the observations, how difficult it is to distinguish them. But it is necessary, as far as is possible, to be acquainted with the appearances each form of cataract presents, as the treatment or operation required must be adapted according to the kind of cataract.

CAUSES OF CATARACT.

I have not much to offer you on this head, as the causes of cataract are in general very obscure. Cataract, however, sometimes arises from obvious causes—injury, violence, inflammation, or sharp-pointed bodies wounding the capsule of the lens, or the lens itself, and consequently, producing opacity of these parts. The opacity arising from this cause often becomes absorbed, and the case undergoes the natural process of cure without requiring an operation. It is produced too by inflammation of the globe of the eye; but then the cataract is capsular, and not lenticular. Cataract, however, arising from these causes, is exceedingly rare; and by far the greater number of cases are produced, as it is called, spontaneously, or under circumstances which are too subtle for our cognizance. It has been said that where the eye has been tried a good deal and subject to much exercise and strong light, as in blacksmiths, glass-blowers, &c., that cataract is produced: this is exceedingly doubtful; and if it is so, there are many cases in which no such cause can be assigned. It is also not unfrequently congenital, and of course produced from none of the causes mentioned. It also runs through families, and appears to be hereditary. It has been shown that it may be produced by external causes which are obvious, yet it more frequently comes on without any assignable cause.

Prognosis.—Of course, by this I mean a prognosis as to the issue of the case by no other means than an operation; that is, before performing the operation, ascertaining whether service can or cannot be afforded by the operation: whether the changes which the eye may have undergone from inflammation during the progress of the complaint, or the symptoms, are such as to preclude the chance of success if an operation were performed, and destroy all hopes of vision ever being regained. Now there are certain symptoms accompanying this affection, by which you are enabled to form a pretty accurate opinion as to the issue. There are some extremely valuable observations on this part of the subject to be found in Scarpa's work on the diseases of the eye. The first circumstance which leads you to determine as to the success of the operation is, whether the loss of vision has been gradually supervening, and has always been in proportion to the opacity of the lens; second, whe-

ther the cataract has been accompanied by chronic ophthalmia, or any changes have been produced in the eye by it: if the cataract has been attended by a penetrating pain in any part of the eye, or orbit, or back of the head, which it will be necessary to inquire about; third, whether the motions of the iris are duly performed, in the different variations of the light; if not, fear may be entertained of the eye being amaurotic; fourth, if there is the power of distinguishing between light and dark, or the colour or forms of things, or the shade of passing objects. These circumstances should be particularly inquired into; and if you find the patient has all, or the greater part of them—that is, if the defect of sight has been increasing just in proportion to the increase of the opacity of the lens, and the patient has had no pain in the head, and the motions of the iris are free, and light can be distinguished; then you may operate, and with the chance of success, as there are no evident reasons against it.

For by the first circumstance you see that the vision has been impaired in consequence of the opacity of the lens; by the second, that there has been no disorganizing inflammation in the eye, or that the brain and origin of the optic nerves have been affected; by the third, that the retina is sound; and by the fourth, if the opacity of the lens be removed, that the retina will be in a state to receive the impression of external objects. But these signs are not so certain as they might appear, for the iris might act, and yet amaurosis exist: and if one eye were not closed, the motions of the iris of the other might be prevented, by sympathy from the other. Thus it appears that the state of the iris does not always determine the existence of amaurosis. When there is cataract, the operation must be regulated by taking all the circumstances into consideration; by the figure of the cataract: whether there are any adhesions of the iris to the capsule of the crystalline lens; and especially by the patient being able to distinguish objects, and light from darkness; but though this is a favourable symptom, yet persons may have amaurosis, and be able to distinguish day from night, and even objects from one another. On the whole, it is a very favourable symptom, and when present, the operation may be performed. In general, when the case is doubtful, you had better perform the operation, of course taking care to inform the patient of the state of the case; the pain is not great, and you will not leave the patient in a worse state than before the operation. It would be extremely culpable for any one to operate where it was quite apparent that no relief could be afforded; and yet I am sorry to say, that I have known individuals operate where there was no more chance of doing good than if the eye had been scooped

out of the head—such men are unprincipled, and would undertake any thing for the purpose of gain.

Another question to be determined on is, whether the operation should be performed if one eye only is affected? The answer appears to be plain, yet there are some who contend that the operation should be resorted to when there is cataract in one eye only, and their principal reason is this; they say, that it is known a sympathy exists between the two eyes, and that if a morbid action is set up in one, it will be excited sympathetically in the other, and thus disease be communicated to the one which is sound, and an operation be required to be performed on it. I do not think myself that this is a sufficient reason, because, under so little excitement, the chance of the other being affected is slight. The disadvantages of this plan are various; I know that a sympathy exists between the eyes, and that if inflammation is set up in one, it will be excited by sympathy on the other, which may destroy the organ that is sound. But suppose you succeed, what do you effect? the focus will be different, and the patient will not be able to use both eyes at the same time. Next, where there is only one eye sound, and it performs its office well, and vision is good, it will be better to wait till it becomes dim; then the operation for restoring the patient to sight may be performed, and two chances be in the patient's favour. Therefore it seems that in performing the operation for cataract, where one eye only is affected, you expose the patient to the risk of losing the sight of both. The plan that appears to me to be the best is, not to operate except both are affected; then you may safely perform the operation.

Before speaking of the operation for cataract, it will be expected perhaps to premise by saying something of the treatment; but besides an operation in this complaint very little else in the way of treatment will be of use. Various plans of treatment have been adopted, but without success, therefore I shall proceed at once to speak of the operations. The operations for cataract are three in number—first, depression, or couching, by which the cataract is removed from the axis of vision; second, extraction, which consists in making an incision through the cornea; third, the operation for the solution of the cataract.

OPERATION FOR DEPRESSION OR COUCHING.

This mode of operating consists in removing the opaque lens out of the axis of vision by depressing it into the vitreous humour: this is done by a needle, of which there are three different kinds now employed, Hey's, Scarpa's, and Beer's needles. Hey's needle is about seven-eighths of an inch in length; it is rounded except at the point, where it

is flat for the eighth of an inch; it terminates by a semicircular cutting edge, which ought to be exceedingly sharp.

Scarpa's needle is more slender than the other, and curved at the point. When you look at it sideways, it presents a flat convex appearance on the dorsum, it is of a triangular shape towards the point, and has also a concavity; it is sufficiently strong to depress the lens. The next is Beer's spear-pointed needle; it is narrow at the neck. I give the preference myself to this instrument; a surgeon is not so likely to wound the ciliary ligaments or processes with it. The needle is the only instrument required; some use a speculum, but excepting in children, this will not be of much use. Previous to the operation, very little preparation will be necessary; of course, you ascertain whether the patient is in good health, see that the bowels are regular, and that all the functions are properly performed. We next come to the mode of performing the operation. The light, and the position of the patient and operator, are extremely important and all to be attended to. The light should be clear, distinct, and full, but not vivid, and it should not fall on the centre of the eye of the patient but laterally, else it would produce a dazzling, and unsteadiness of the organ. The patient should be placed on a low seat with a high back, and the head resting against it, or the body of an assistant. The operator should be on a high stool, or at least of sufficient height to enable him to put one foot on it, and rest his elbow on the knee opposite to the eye to be couched. Having thus prepared himself, the operator holds the instrument between the thumb and fore-finger, the assistant passing his fore-finger round the head of the patient, raises the upper lid by a fold of skin, and presses it gently against the superciliary ridge. The patient is now directed to look inwards towards the nose, and the operator resting his little finger on the upper part of the chin of the patient, penetrates the sclerotic coat about a line and a half from the junction of the transparent with the opaque cornea, and a line below the transverse diameter of the eye. In the first place, the needle is introduced here, just where the retina terminates, and the ciliary ligament commences, so that these shall be avoided; and, 2ndly, For the purpose of not wounding the ciliary artery, as it goes along the middle of the external convexity of the eyeball, between the sclerotic and choroid coat. In using Beer's needle, it is introduced with the edge laterally, and its surface upwards and downwards, and directed towards the middle of the globe of the eye. It must be moved slightly between the fingers; a piece of ivory or brass at the handle, showing the disposition of the cutting edges, and then the point carried inwards parallel to the iris, and so as to cover the posterior chamber; the instrument will be now visible through the pupil. When

this is the case, the operator must raise the needle upwards, and then depress it downwards, and backwards, and a little outwards, by which means the crystalline lens becomes pushed into the vitreous humour. If the lens should rise from its situation, it must be again depressed, and when it is safely lodged in the vitreous humour, the needle must be withdrawn. Some continental surgeons perform the operation of *reclination*, which consists in turning the lens over, and pushing the upper edge backwards, and the lower forwards, and likewise in puncturing the cornea instead of the sclerotic; the best plan is that recommended by Scarpa.

The after-treatment is very simple, and consists in a single fold of linen moistened in cold water being applied to the eye. The patient is also to be put in a dark apartment, and narrowly watched, in order to see if inflammation supervenes; very frequently none arises.

LECTURE XXXVI.

ON EXTRACTION OF THE CATARACT.

This operation was first performed towards the end of the seventeenth century; it was not, however, generally known till somewhat later, when it was brought into repute by Deville, who published the method of performing it. Considerable improvements were subsequently made in the mode of performing it by Wenzel, who practised it with great dexterity, and astonishing success. There seems to be no necessity for preparing a patient for this operation, beyond taking care that his bowels be duly evacuated, and that he has not used any unusually stimulating diet previous to the operation. It would be highly improper to perform it, if the patient was at the time labouring under any other complaint or morbid affection; means should be taken to remove any complaint of this kind before the operation is attempted. Beyond these precautions, however, no preparatory treatment will be necessary, though I am aware, that much stress was formerly laid upon this point. Several instruments will be required for the performance of this operation, which is a more complicated one than that to which I before directed your attention.

In the first place, a cornea knife will be necessary; the knife used by Wenzel, was something like a bleeding lancet; the blade, however, was neither so long nor so broad, and the edges were straight. Ware's knife was an improvement on Wenzel's; it is much less spear-pointed; the edges are straight as in Wenzel's, but while the lower edge is cutting, the superior edge is only cutting towards the point. From the point towards the handle there was a gradual increase in the size of the

knife, a circumstance upon which Ware particularly insisted, in order that the knife, on being carried onwards, might always *follow* up the opening, so as to prevent the escape of the aqueous humour. Wenzel's knife, however, and Ware's improvement upon it, are greatly inferior to the knife contrived by Beer, the celebrated oculist of Vienna. This knife, as you will observe, is very different in shape (the learned gentleman exhibited the different instruments to the class); the upper edge is quite straight, while the lower edge is made straight and oblique; the whole of the lower edge is cutting; the upper edge is cutting towards the point, and the size is accurately increased from the point towards the handle, so as to fill up the opening, and prevent the escape of the aqueous humour. Beer's knife is preferable to either of the others, because there is a much greater extent of cutting surface, so that the section of the cornea is completed in a shorter time and in a safer manner; it is besides capable of being made with much greater accuracy. A speculum was sometimes used in this operation, but it is not at all necessary; in fact, all specula are objectionable, as they are likely to produce undue pressure on the globe of the eye. The next instrument is a pair of curved scissors, in order to enlarge the opening made into the cornea, if it should not be of sufficient size to extract the cataract. A minute curved needle will be required, in order to scratch the capsule of the crystalline lens; a curette, or scoop, to remove any opaque fragments of the lens, and a pair of minute forceps, of which the best construction is that recommended by Beer, to extract any portions of opaque membrane from the capsule of the lens. These are the principal instruments required in this operation. Let us next consider the mode of performing it. The position of the patient should be nearly the same as that in the operation for couching; he should be placed opposite a window, so as to admit a full, clear, but not too vivid light. It should not be a reflecting light, so that if the sun should happen to shine, a north window should be chosen; the inner side of the eye towards the nose, where the point of the knife is to be carried through, should be well brightened. The patient should be seated in a low chair with a high back, his head resting against it, or firmly supported against the chest of an assistant. The operator should place himself behind the patient in a chair of sufficient height to enable him to plant his foot conveniently on a stool, and resting his elbow on the knee opposite to the eye to be operated upon, bring his hand towards it. The assistant should then place his hand behind the patient's head, and with the extremity of his fore finger gently raise up the lid without making pressure on the globe. The operator then takes the knife in his right hand, if it be the left eye which is to be operated upon, and in his left, if it be the

right eye, in the same way as he would take a pencil between his fore-fingers and thumb, resting his little finger upon the malar bone.

The first thing which the operator then does is, to make what is called the punctuation of the cornea. He introduces the point of the instrument at the distance of half a line from the anterior junction of the cornea with the sclerotic coat, and passes it in a direction nearly parallel to the iris, and before it with a little obliquity, through the anterior chamber to the opposite or nasal side. In making the section of the cornea, the knife should be carried onwards, without any downward motion; and as soon as the section is completed, the lid should be allowed to drop over the fore part of the eye, to prevent the escape of a portion of vitreous humour, if there should be any spasm of the part, or any unsteady motion of the patient. The operator waits till the eye is quiet, and then introduces the curved needle with a convexity under the flap of the cornea; and turning the point towards the fore part of the capsule, moves it upwards, and downwards, and laterally from side to side, making a sort of crucial incision. He then squeezes out the cataract by making gentle pressure on the globe above and below, until the lens is lifted from its bed, and passes through the opening of the cornea upon the cheek of the patient. All that then remains to be done is to examine whether there are any opaque fragments of the lens left; if there are, they must be scooped out by the curette; if not, the upper lid is to be rubbed over the surface of the cornea. If there is any portion of opaque membrane remaining, it must be removed by the forceps, and in this way the operation will be completed. (The learned gentleman proceeded to perform the operation exactly in the manner above described, on the sheep's eye; which, he observed, was better adapted for this purpose than the human eye, on account of its being larger and less flaccid.)

Many untoward circumstances, however, frequently interfere with the success of this operation. In the first place the section of the cornea may be too small; in which case you will either be unable to dislodge the cataract, or so much force will be required for that purpose as is likely to produce serious inflammation, and such a degree of disorganization as will destroy vision. The section through the cornea should be about nine-sixteenths of a line, or one-sixteenth more than half a line from its junction with the sclerotica; the point of the instrument is introduced a little below the transverse diameter of the eye, on one side, and should come out a little above it on the other. If you find, when you have completed the section of the cornea, that the opening is not sufficiently large, do not hesitate to use the scissors, in order to make it large enough to admit the passage of the cataract. The second

untoward circumstance to which I shall advert is, the premature escape of the aqueous humour, either from the unsteadiness of the operator, or from some defect in the knife. On the escape of the aqueous humour, the iris loses its support, and becomes prolapsed. When this happens, the way of preventing any mischief will be, not to continue the incision, but to rub the cornea with the point of your finger, by which the prolapsed iris will be stimulated to contract; and on this being removed out of the way, you may complete the incision. This is the expedient recommended by Wenzel and Ware, and it answers the purpose extremely well. The third unfortunate circumstance which sometimes occurs is the loss of a portion of the vitreous humour, arising from some undue pressure on the globe of the eye by the operator or assistant, or from some spasm of the muscles of the eye, though the last cause seldom happens. Another way in which this accident sometimes occurs, is when the needle is injudiciously used too near the circumference of the lens, and the capsule of the vitreous humour is torn through; so that when you make pressure on the globe, instead of the cataract coming forward, a large portion of vitreous humour is protruded. In this case you should not attempt to force out the cataract; but you should endeavour to entangle it as much as possible, so as to prevent the escape of the vitreous humour. The loss of the vitreous humour is sometimes occasioned by the use of the curette, in consequence of the instrument passing through the back layer of the capsule. The curette should never be used when the pupil is at all obscured; the field of the pupil should be perfectly distinct when you resort to that instrument. The loss of a small portion of vitreous humour does not essentially interfere with the success of the operation; indeed, it has been said, and perhaps justly, that the loss of a small portion is rather beneficial than otherwise. It would be an extremely dangerous experiment, however, to endeavour to force out only a certain quantity. The loss of a portion of this humour should not prevent you from completing the operation in the best possible way, by removing all the loose fragments of the opaque lens, and the different portions of opaque membrane or capsule. Another unfortunate circumstance which sometimes happens, is the introduction of the cornea knife between the lamellæ of the cornea; the consequence of which will be, that the section of the cornea will be very small and imperfect. There are various other circumstances which may interfere with the success of this operation, which I shall not detain you by mentioning. Dexterity in performing it can only be acquired by practice. I do not agree with Wenzel, that you must poke out a hatful of eyes before you can hope to perform this operation with success; but, undoubtedly, considerable practice is ne-

cessary to enable you to acquire dexterity in performing it. Whenever any unfortunate circumstance happens, you should be perfectly calm, cool, and deliberate; close the eye-lid; consider what is best to be done; and having made up your mind on that point, proceed with firmness and decision in the operation. With respect to the after-treatment, your object will be, as far as possible, to prevent inflammation. A compress of fine linen or cambric, kept wet with cold water, should be applied to the eyes, or rather to the eye opposite that which has been operated upon; it should be fixed by means of a bandage, carried round from the occiput, crossed in front, and pinned on the sides of the night-cap. The patient should be carried to bed after the operation; placed in the recumbent posture, with his head a little elevated, and the room should be darkened. He should be allowed nothing but barley-water, tea, or water-gruel, for the first few days; and if there should be any symptoms of inflammation, such as pain, a sensation as if there were some external body in the eye, accompanied with quickness of pulse, a quantity of blood should be immediately taken away from the arm. It will be better not to disturb the bandage, or raise the lid to examine the eye, for at least three days, unless the patient should feel any considerable pain or irritation; for in that case it would be advisable to ascertain the cause by examining the eye. The patient should be kept in bed in the recumbent posture for five days, and not even be suffered to rise for the evacuation of his fæces; a bed-pan should be used for that purpose. At the end of that time he may get up to have his bed made. The best way of preventing irritation is carefully to avoid making any undue pressure on the globe of the eye. Great care must be taken, in adjusting the bandage, not to depress the lower lid, by which means the section of the cornea may be brought over, and the adaptation of the cut edges prevented. Loose eye-lashes are sometimes a source of irritation, and it will be right to examine whether there are any such before the operation; if there should be any tendency to inversion of the lid, you may prevent the lid from rubbing against the surface of the globe by means of a bit of adhesive plaster fastened to the cheek. I have already stated that I do not advise you to operate if one eye is sound; nor do I think it right, if there should be a cataract in each eye, to operate on both at once, unless the patient should particularly desire it.

OF THE OPERATION FOR PROCURING SOLUTION OF THE CATARACT.

The third operation is that for procuring solution of the cataract, which, as it is particularly adapted to the cataracts of children, leads

me to make some observations in this place on congenital cataract. Children are not unfrequently either born with cataract, or with a disposition to cataract, which speedily makes its appearance. Indeed it is not common to find an absolute opacity of the lens, or of the capsule containing it, at the birth of the child; the cataract usually makes its appearance within a few months, or at least within the first few years, from the birth of the child. In some instances there seems an hereditary predisposition to this disease, several children in the same family being affected with it. The nature of the cataract may be firm, soft, or fluid; and it may be lenticular or capsular, as in the adult. By far the most common form, however, according to Dr. Saunders, who has given particular attention to cataract in children, is the capsular. In general, he found the lens itself more or less absorbed, the anterior and posterior layers of the capsule being opaque and adhering. The appearance of the cataract is somewhat different from that in the adult; there is an opaque nucleus either at the centre or some part of the circumference, and the rest has an unequal opacity, or streaked reticulated appearance. Another circumstance peculiar to congenital cataract is the unsteadiness and constant motion of the eye, which it is not difficult to explain. The eye has never been accustomed to have its vision fixed by objects, unless, perhaps, very imperfectly, and consequently the will has never been in the habit of influencing the muscles which give direction to the globe of the eye. Hence, its unsteady and constant motion. It was formerly deemed advisable to defer the operation for cataract in children, but Dr. Saunders has introduced a mode of operating in these cases which may be resorted to at any age. This is certainly one of the greatest improvements which has been made in this branch of surgery, not only because vision is extremely important for the purposes of education, but because, if the operation be delayed, a very considerable time will elapse before the patient can acquire a command over the eye, in consequence of the want of voluntary influence over the muscles. Another, and more forcible reason, why this operation should not be delayed, is, that it is an universal law in the economy of nature, that all parts which are not exercised lose more or less of power; and, consequently, the retina, from not being accustomed to receive the impressions of light, loses a considerable portion of its power. Dr. Saunders found that in many cases where this operation had been delayed, the patients retained no more power of vision than was sufficient to enable them to distinguish between light and darkness. The operation may in general be performed with a hope of success between the age of eighteen months and four years. Dr. Saunders's mode of operating is not confined to the cataracts of children; it may be employed also in

the cataracts of adults, provided they are fluid, soft, or membranous cataracts.

I do not mean to say that this operation is entirely new; if you read Mr. Pott's works, you will find that, in some instances, he performed a very similar operation. He tells you that, in cases where the cataract was too soft for depression, he sometimes lacerated the anterior layers of the capsule, so as to admit the aqueous humour and procure the solution of the cataract. Hey, Scarpa, and Ware, have performed similar operations. We are not, however, to consider those as the inventors of any practice who have merely employed it here and there, without stating any certain rules for its general applicability. It is to Dr. Saunders that we are indebted for having shown the principle on which he performed this particular operation, its applicability to cataract in children, and to some cases of cataract in adults. Dr. Saunders, therefore, may be justly considered as the inventor of this operation, and is entitled to our respect and admiration for the introduction of so material an improvement in this branch of surgery. The operation is very simple; it consists merely in making an opening in the anterior layer of the capsule of the lens, breaking up more or less the texture of the cataract, and admitting the aqueous humour in which the cataract is dissolved, and by this means absorbed. It may be more properly called an operation for the absorption, than for the solution of the cataract, since absorption is the ultimate object of it. The instrument required is a needle, very similar to that employed in the operation for couching; the point, however, is somewhat different; its shoulders are made cutting. It will be right, before the operation, to use belladonna for the purpose of dilating the pupil, so that the cataract may be distinctly seen. A small quantity of the extract of belladonna, softened to the consistence of cream, may be introduced into the eye, or smeared round the lids. In operating on the adult, the patient should be placed in the same position as in the operation for couching; children are better placed in the recumbent posture, with the head fixed on a pillow. Sometimes a speculum is required to steady the eye; Pellier's speculum is the best for this purpose. The needle may be introduced either in the same way as in the operation for couching, or else through the cornea. In the latter case there are two modes of operating, called the anterior and the posterior. In the former the needle is introduced at the distance of half a line from the junction of the cornea with the sclerotica, carried parallel to the iris, and turned inwards, so as to break up a portion of the capsule of the lens. In the posterior operation the needle is carried through the posterior chamber, a little behind the iris, and the texture of the capsule is broken up in the same way, so as to

admit the aqueous humour. If the cataract be fluid, it immediately mixes with the aqueous humour, and you will have no more trouble. As to the after-treatment, your object must be, as in the former cases, to prevent inflammation. It is better in this operation not to attempt to do too much at once; but rather to repeat it frequently, than to break up the texture too extensively at once.

Having described these different operations, it may be necessary to consider which of them it may be most expedient to adopt. It seems to me that in those cases which admit of the operation for solution, namely, fluid, soft, and most cases of membranous cataract, that operation is greatly preferable to any other. Soft, fluid, and membranous cataract cannot be depressed. It is true that the operation for extraction might be performed, but it is to be considered that the operation for solution is much more easy, and that it does very little injury to the eye. In firm cataracts, where it is a matter of indifference whether the operation for depression or extraction should be performed, that for extraction, supposing it to be equally well performed, is undoubtedly preferable, because the disease is entirely removed by it. It is not always, however, a matter of indifference, for there are many cases in which it would be extremely imprudent to attempt the operation for extraction, as, for instance, in cases of adhesion of the iris to the cornea. or where the cornea is very flat, and the anterior chamber necessarily small, or in cases of contraction of the pupil, myosis, or arcus senilis. There are some cases in which the unsteadiness of the eye is so great, either from spasmodic motions to which the patient is subject, or lastly, where there is such indocility in the patient, either from invincible fear or stupidity, that it will not be advisable to attempt the operation. I am led to these remarks, in consequence of my having operated in this hospital on a woman who had cataract in both eyes. When the operation was proposed to her she immediately consented, and, supposing that she would have sufficient resolution to go through with it, I sat down with perfect confidence to perform the operation for extraction. She no sooner, however, felt the pain—pain it can scarcely be called—the uneasiness, rather, arising from the application of the instrument—than she could not keep her head at all steady, but threw herself into all sorts of postures. I succeeded, with great difficulty, in making a very indifferent section of the cornea, and in extracting the cataract from the eye. I know not what induced me to be so indiscreet, after the specimen I had had of this patient's firmness, to attempt the operation on the other eye. I did so, however, and if the patient was unsteady during the first operation, she was ten times more so during the second. The consequence was, that though I completed the section of

the cornea in the second, I found I could not proceed without the risk of doing considerable injury to the part; and I thought it best to leave the cataract in its place. Where there are no contra-indications to deter us from performing the operation for extraction, it is undoubtedly the most effectual operation, as it completely removes the disease; but then it requires much more skill and dexterity than the operation of depression; and the want of sufficient skill is more likely to prove injurious to the patient. The operation for depression is extremely easy, but it has its disadvantages. Not unfrequently the cataract rises again, and it will be necessary to repeat the operation. If the cataract be depressed on the retina, the patient will experience constant pain, which sometimes terminates in amaurosis. It sometimes happens after the operation for couching that the patient is seized with vomiting, accompanied with acute pain. This has been supposed to be the consequence of wounding the ciliary nerves. I know not whether this opinion is well-founded, but it commonly happens, when the operation is followed by vomiting, that the cataract rises again. No judicious surgeon will, indiscriminately, prefer one mode of operation to another; his opinion must be decided by the nature of each particular case. In general, where the nature of the cataract admits of it, the operation for solution is preferable. In cases where the operation for extraction is not contra-indicated it will be preferable to that of depression, if the surgeon has had sufficient opportunities of acquiring dexterity; but if he has not been much in the habit of performing the operation, I should recommend as the safer, though less effectual course, the operation for depression.

I shall here describe the

OPERATION FOR ARTIFICIAL PUPIL.

Where, from some defect of the cornea or iris, or the parts connected with them, there is no passage for the rays of light, the operation for artificial pupil is required, which consists in making a section with a cutting needle, through the iris, which, by the elasticity of its fibres, separates the edges, and makes a passage for the rays of light. Cheselden was the first surgeon who performed this. There are three modes of performing the operation:—1st, by a simple incision of the iris, technically called *corotómia;* 2dly, where a portion of the iris is cut away, which operation is called *corectomia:* 3dly, where the iris is turned away from its attachment to the ciliary ligament, which is called *coredialysis.* The simple incision of the iris is seldom resorted to; the operation of excision of a part of the iris was recommended by Mr. Gibson, and it certainly the best when the case admitted of it. Mr. Gibson's mode of performing it is to make an incision with a knife, as

near as possible to the iris, and then, making gentle pressure on the globe of the eye, so as to protrude the iris, to snip off a portion with a pair of scissors. If the iris was adherent, so that it could not be protruded, he hooked it forward with a little hook, and then snipped away a portion with the scissors. The operation of separating a part of the iris from its attachment to the ciliary ligament may be performed with Scarpa's needle. The needle should be introduced on the outer side through the cornea, at the distance of two lines from its junction with the sclerotica, and carried across the anterior chamber parallel to the plane of the iris. The point is then to be directed through the iris towards the inner side, and then, carrying it backwards and outwards, the iris is to be detached from the ciliary ligament. The excision of a portion of the iris is the preferable operation, but where the case does not admit of it, the detachment of the iris from the ciliary ligament is the next best operation. It is impossible to lay down general rules for these operations in a lecture, for the cases are so infinitely varied that much must, after all, be left to the discretion of the surgeon, who should adapt the nature of the operation to the circumstances of each particular case.

LECTURE XXXVII.

ON FUNGUS HÆMATODES OF THE EYE.

The first disease to which I shall call your attention is the fungus hæmatodes of the eye, malignant fungus, or, as it is called by some, medullary sarcoma, a disease which soon proves fatal unless an operation be early performed, and even then the chance of success is extremely doubtful. No age appears exempt from this complaint, but it more frequently attacks the young; and a large proportion of the cases occurs before twelve years of age.

SYMPTOMS OF FUNGUS HÆMATODES OF THE EYE.

The first circumstance which attracts the notice of the patient is the vision becoming impaired. On looking into the eye at the commencement of this complaint, you see opposite to the pupil, and deeply seated, an appearance like a mirror, resembling an opacity of the lens, from which it is difficult to distinguish it. If you watch the progress of this disease, you will see that this appearance enlarges into a prominence, proceeding from the bottom of the eye towards the cornea, and as it reaches the lens, you must be the more on your guard that you do not mistake it for cataract. There is one appearance, however, at this stage

by which you can distinguish the one from the other upon the opaque substance, or the retina, of which its covering consists, branches of the arteria centralis retinæ may be seen ramifying. The other symptoms are loss of vision, and the iris remaining immoveable. As the prominence enlarges, the iris becomes protruded, and the cornea distended. The conjunctiva becomes inflamed, the eye-lids vascular, and in a diseased state; and in process of time the cornea sloughs, an opening is formed, and a discharge of a ropy mucus first takes place.

The fungus does not always protrude through the cornea, but sometimes through the sclerotic, and then it has a purple, livid hue, and is covered by the conjunctiva. When the fungus increases in size, it assumes a dark red colour, its surface is unequal, and irregular; it bleeds at the slightest touch; the parts slough, and then there is a fetid, sanious discharge. During the progress of the complaint, the health becomes affected, the countenance puts on a sallow hue, and the patient wastes in flesh. This disease is accompanied, and generally preceded, by disorder of the digestive organs; the appetite is impaired; and there are present all the other marks of derangement of the general health. When the strength and health are broken up, the disease very soon comes to a termination. The close of the disease is preceded by hectic fever; as is that of most complaints from which the general health has suffered much during their progress. In fungus of the eye, the rest is completely destroyed, there is an affection of the nervous system: and in children, convulsions come on, which terminate their existence. In all stages of the disease, there is a tendency to them, and they generally prove destructive to life.

If you examine the appearances of the eye, you will find little difference in them from those of fungus in any other part. There is a grumous appearance on the surface, and the fungus bears a striking resemblance to the medullary matter of the brain; not unlike cream to the sight. The appearances, however, vary in different forms of the complaint. No one texture of the eye is free from it. It frequently commences from the optic nerve, extends to the retina, sclerotic and choroid coats; but, on examining a fungus of the eye, it would be difficult to say where it began, the disorganization is so complete; the retina is destroyed—the humours are absorbed—the choroid protrudes, and very little of the natural texture is left. (Here the learned gentleman exhibited to the class specimens, which showed the different appearances in the different forms of the disease.) In the case from which one specimen was taken, Mr. H. Cline extirpated the eye; the patient was a Portuguese. The greater part of the anterior chamber is filled with a dark substance, like the pigmentum nigrum. In this man, however, the disease returned.

In some instances, you will find the disease extending along the optic nerve, which enlarges, becomes altered in texture—of a brown colour—and reaches the brain, which will also be affected by the disease. The only remedy in this disease is the extirpation of the eye, and this in the early stage. In most cases, the operation proves unsuccessful, in consequence of its not being performed sufficiently early, or before there is a disposition in the constitution to reproduce the disease.

There is another disease which requires extirpation of the eye; therefore, I shall speak of it first, and then describe the operation.

CANCER OF THE EYE.

By cancer of the eye is meant, not cancer of the globe of the eye, for it rarely or ever commences in it; but it begins in the appendages and conjunctiva, and then extends to the globe of the eye; but I repeat that this disease scarcely ever makes its appearance first in the globe; its common seat is in the conjunctiva. Cancer of the eye at the onset resembles a warty tumour with an ulcer on its surface, which has exactly the same appearances as ulcers in other parts of the body; therefore it will not be necessary for me to describe them: it then extends not only to the globe of the eye, but to the palpebral ling, the lachrymal gland, the periosteum of the bones forming the orbit, and the antrum; in fact, the globe, and its appendages, become one entire mass of disease.

No good can be expected in the treatment of this complaint unless the cancer be early removed by the knife. In the progress of the disease the general health becomes broken up. I shall now proceed to show you the operation for the removal of the eye.

EXTIRPATION OF THE EYE.

Although this operation appears formidable, and is so to the patient, as it is a most painful one, yet it is not difficult of execution. The best mode of performing it is as follows:—The patient is to be placed in the sitting posture, or, at any rate, with the head elevated, and in order to steady the eye, or shift its position, if necessary, you are to pass a needle, armed with a ligature, through the fore part of the globe of the eye, by which means you can readily steady it, or move it from one side to the other. If the lids are contracted, or the eye-ball is exceedingly large, it will be necessary to divide the outer angle in order to facilitate the operation. An assistant raises the upper lid, and the operator then introduces a double-edged straight knife through the conjunctiva, and divides the cellular membrane as extensively as he can. He next cuts through the oblique muscles; and having done this, he then divides the recti muscles and the optic nerve; to complete this last step of the

operation, a curved knife adapted for the purpose, is used, and the globe of the eye is thus easily extracted. It seldom happens that any hemorrhage takes place which may not be stopped by dossils of lint. The lids are to be brought in apposition, a compress of linen is to be applied over the eye; inflammation should be guarded against, and the patient should not be neglected; for although inflammation does not frequently supervene after the operation, yet it sometimes comes on, extends to the membranes of the brain, and proves fatal.

Having now concluded the morbid affections of the globe of the eye, I shall proceed to speak of those of its appendages, and first of the eye-lids.

HORDEOLUM.

One of the most common affections of the eye-lids is that known by the name of *stye*, or *hordeolum*, from its resemblance to a barley-corn. It consists of a small abscess in the lid, and is produced by an obstruction in the follicles of Meibomius: the secretion from the part is altered, becomes inspissated, lodges on the lid, excites irritation, inflammation, and the process of suppuration; lastly, the small abscess breaks, and matter is discharged. In most instances the suppuration is confined to a small space, but in others it puts on the character of a boil, and sloughing of the cellular membrane then takes place. Some persons are more prone to this disease than others; it frequently appears in those who have been subject to disorder of the digestive organs, or in those of a scrofulous habit of body, and young persons. This morbid affection would be of little consequence in itself, but for the state of the system on which it generally depends. The eye-lids adhere to each other in the mornings, which distresses the patient considerably. There may be excoriation of the lids—redness and thickening of the conjunctiva—excoriation of the skin of the face; lippitudinous ulcers break out; the cilia becomes altered in their growth, and turned inwards on the globe of the eye; and from these different states a tendency to chronic ophthalmia is kept up. It is necessary when styes are attended with inflammation and redness, that cold applications, poultices, and fomentations should be applied, as in other inflammations; and when matter is formed, that the abscess should be opened with a lancet. But it more frequently happens that this affection depends upon something wrong in the system, on derangement of the digestive organs, or impaired functions in some part of the body; and then these states must be attended to, for they produce irritation, and sometimes ulceration of the edges of the eye-lids. The best local applications that can be made use of, are those of a mild stimulating nature, the mercurial ointments,

with a little of which the edges of the lid should be besmeared every night at bed-time, the parts being previously washed with tepid water. The citrine ointment, (the *unguentum hydrargyri nitratis*) is the one in common use; but it is in its proper state too stimulating for the eyes, therefore it must be diluted with some simple ointment. Both the red and white precipitate mercurial ointments are used, and the zinc ointment also; in fact, it is not essential what kind is employed, if it be mildly stimulating.

TRICHIASIS.

Another affection of which I shall speak, is that known by the name of *trichiasis*. It is that state of the eye-lashes, in which they become altered in growth, and turned inwards on the globe of the eye, irritating the conjunctiva on every motion of the eye. Some think that this complaint is not owing to the effect of the altered growth of the cilia only, but to a turning in of the lids, called

ENTROPIUM.

Entropium, or inversion of the eye-lids, is produced from ulceration of the tarsi, the cicatrices formed by the healing of lippitudinous ulcers which alter the shape of the lids, so that the eye-lashes are turned inwards, irritate the conjunctiva, and produce a continual state of irritation of the whole organ. There is a watering of the eye, together with chronic ophthalmia, and in a short time vessels may be seen shooting over the cornea; nebula and ulceration of the cornea supervene, and thus a serious state of irritation of the transparent part of the eye is produced. Where the affection is simple trichiasis, the only means that can be relied on, is to pluck away the eye-lashes; some benefit may be derived from applying a piece of adhesive plaster to the lid, which is to be fastened to the cheek, so that the eye-lashes may be kept bent outwards. The best forceps for removing the eye-lashes is this, (Mr. Green exhibited it to the class) one rather broad at the points. But when the lid itself is inverted you must do more, and, I believe, nothing will be of any use except cutting away a piece of skin from the affected lid; for when this is done, the edges of the wound are brought together by strips of adhesive plaster; a cicatrix is formed, and the eye-lids are then drawn upwards. The mode of performing the operation is very simple; you must lift a portion of the skin of the affected lid with a pair of forceps that has towards the point transverse branches, and which are grooved as you here see (holding it up); with this you lay a firm hold of the portion of the lid, and all you have to do is, to take a pair of curved scissors, and cut off the projecting portion, as near to the edge

of the lid as you can. (The operation was then performed before the class.) We next come to the opposite side of the lids.

ECTROPIUM.

Ectropium, or eversion of the lids, happens from ulceration on their edges, an altered and vitiated secretion from the follicles of Meibomius, which produce a redness and an altered state of the conjunctiva, and from cicatrices and contractions of the skin of the lids, which tend to evert them. This complaint is very distressing to the patient; the eye has not its natural covering; irritation, from extraneous bodies getting into it, is produced, and thus a constant state of chronic ophthalmia is kept up. When the disease is brought on by a thickened state of the conjunctiva lining the lid, you must remove that portion; if from a cicatrix, it must be divided; but it will be proper to state that this seldom answers; the divided cicatrix recontracts, and the disease returns. The plan usually adopted consists in removing a triangular portion of the lid, just in the same way as the operation for cancer of the lip is performed; by cutting through a piece of lid which is raised by a pair of forceps, so that the base shall be towards the edge of the lid, and the apex below, at the union of the two sides. A suture is applied through the incision, the edges of the wound are brought together; these united, tend to keep the lid in the natural position; and, in fact, the operation, in this way, is often successful.

Now, gentlemen, I have gone through the various affections of the tunics of the eye, with those of the globe of the eye, and the lids, with the exception of a description of the small tumours, which are often to be met with on them, such as encysted tumours, and others. But as these require no particular plan of treatment different from those in other parts of the body, I shall not detain you about them. In their removal, you must bear one thing in mind, viz. the importance of the organ in the neighbourhood of which they are situated, so that in removing them, you do not injure so delicate a part. The last disease to which I shall call your attention is

FISTULA LACHRYMALIS.

By this term is understood all obstructions of the lachrymal passage preventing the natural flow of the tears and mucus from the eyes to the nose. The most common cause of this complaint is a closure of one of the puncta, and then there is epiphora, or a watering of the eye, together with suffusion of the tears, and the surgeon consequently discovers that one of the puncta is closed. This must be punctured by a small sharp pin, made of gold or silver, which is to be pushed through it to

the lachrymal sac: the obstruction is removed, and the epiphora relieved. When the epiphora continues, the eye becomes irritable, a drooping of the lids comes on, and an altered state of the lachrymal sac is produced. The most important source of this complaint is obstruction of the *ductus ad nasum*. The original seat, then, is in the duct leading from the lachrymal sac to the nose, and the tears, instead of finding their way to the nose, flow down the cheek; this symptom may, however, arise from a polypus in the nose, and then it will be relieved by the removal of the polypus. One of the symptoms of malignant fungus of the nose is suffusion of tears from pressure in the nasal canal; this disease terminates fatally, and if removed it returns; in this complaint the flow of tears is a very unimportant symptom, compared with the original disease which gives rise to it. But sometimes there is inflammation of the bones of the nose, or periosteum covering them, and the membrane lining the duct, which is thickened, and then the duct becomes more or less obstructed. It not unfrequently takes place in persons of a scrofulous habit, and those who are subject to affections of the covering of the bones. It is also sometimes a consequence of the abuse of mercury.

Fistula lachrymalis may be divided into three stages:—1st, where there is only simple distension of the lachrymal sac. 2dly, where there are inflammation and suppuration of the sac. And the third stage is that in which there is a fistulous opening leading from the sac to the cheek.

SIMPLE DISTENSION OF THE LACHRYMAL SAC.

The first symptom which leads the patient, in this stage, to observe any thing amiss with the eye, is, that on reading or exposing it to the wind, there is a watering of the eye; in a short time, this becomes constant, and then a swelling appears at the inner corner of the eye, arising from distension of the lachrymal sac, the tears collecting in it. These produce irritation; mucus and purulent matter is secreted; but when the sac protrudes, pressure made on it pushes the tears or mucus either through the puncta, over the face, or down the nose. The complaint sometimes remains in this stage for many years (pressure being occasionally made on the sac to empty it) with only little inconvenience. From the pressure of the distended sac, and obstruction of the nasal duct continuing, or some accidental cause, irritation is excited, and the second stage produced.

INFLAMMATION AND SUPPURATION OF THE LACHRYMAL SAC.

This affection is attended by a puffiness of the inner corner of the eye, redness of the surrounding skin, which becomes swollen and hard,

from the effusion of lymph. Suppuration having commenced in the sac, ulceration comes on, and the matter effects an external opening, by which it is discharged. Now, obstruction, inflammation, and suppuration do not always take place in the course of the *ductus ad nasum*, from ordinary causes; but the progress of the complaint, when arising from ordinary and from specific causes, will be different. An opening being thus made in the sac, it is rendered permanent, or kept open, by the flow of pus and tears out of the wound, over the cheek; the disease then arrives at the third stage.

FISTULOUS OPENING FROM THE SAC TO THE CHEEK.

In this stage of the complaint, the patient is distressed a good deal by frequent returns of inflammation and suppuration of the sac.

Treatment.—Although various means have been attempted in the cure of this complaint, no plan has been yet laid down that has proved successful; or at least the benefit to be derived from the means and treatment recommended is in most cases very slight. In many cases little need be done but to evacuate the sac, for the purpose of preventing irritation in those cases where there is simple distension of the sac. One cause of this complaint is a vitiated state of the follicles of Meibomius: when matter is secreted, and the eye-lids are closed together, and irritation is thus produced in the lachrymal sac—in these cases the lids should be washed with tepid water, and besmeared every night at bed-time, with a little of the unguentum hydrargyri nitratis. By this means, and attending to the constitution, and removing irritation as it arises, the patient may remain in that state for years. When the obstruction is complete, the distension considerable, the attacks of inflammation frequent, and suppuration has commenced, another kind of treatment must be adopted: in this stage the object of your treatment will be to effect a natural passage for the flow of the tears, that is, through the nasal duct instead of their flowing over the face. Anel is the first who attempted to procure a passage for the matter and tears into the sac, when the natural one was obstructed; and this he did by introducing a very fine probe through one of the puncta and the lachrymal sac to the *ductus ad nasum*, and thus dilated the scricture; but the instrument was so flexible and thin, that it was ill calculated to overcome the obstruction. My friend, Mr. Travers, who has had most extensive opportunities of watching the progress and trying the effect of different treatments in this disease, recommends the use of an instrument of this kind; it is, however, somewhat different; it is more nail-headed, and not of the same exceeding fineness, being more effectual for removing the obstruction. Anel likewise constructed a small syringe,

the mouth of which was to be introduced into one of the puncta, tepid water was then to be injected through the punctum and sac to the nasal duct; but the injection of fluid was found inadequate to overcome the obstruction. It is a useful instrument in gleety discharges from the sac or duct, but beyond this it is quite inefficient.

Mr. Wathen recommended that a hollow metallic tube should be introduced into the *ductus ad nasum;* the object of its being hollow was to allow the passage of tears through it, but it was found inadequate; it soon became filled with mucus. M. Dupuytren is in the habit of using a gold tube in this way, and it is said that most of his cases are cured; this, I should doubt, and in one case I know it did not succeed. Mr. Pott also advised the use of bougies for removing the obstruction. The plan laid down by Mr. Ware is the one now generally adopted; it consists of introducing a nail-headed style into the *ductus ad nasum*, and letting it remain there. The style should be just large enough to allow of the flow of the tears by the side of it. If no opening has been made from the repeated inflammation, the mode you will adopt to make one is as follows: you direct the patient to be seated, and then standing behind him, you pass your hand round the patient's head, open the lachrymal sac, and then carry a blunt pointed bistoury inwards and downwards and divide the obstruction; the instrument with which you make the external opening is a phymosis knife. Having done this, you ascertain whether the passage is free, and then introduce a nail-headed style about an inch and three-eighths long; the head of the style is to lay obliquely on the front of the cheek, and a piece of adhesive plaster spread on black silk to be put over it, which will prevent persons from suspecting that there is any thing wrong with the eye. The style requires to be removed once-day, for the first week, and to be washed; sometimes there is little irritation produced by its introduction; but, in general, there is none, and the comfort the patient experiences is very great; the water ceases to flow over the cheek—the sight becomes stronger—the tendency to inflammation is obviated; and, indeed, so much comfort is experienced that the patient is loth to dispense with the use of the style. Although the relief obtained from this plan is great, yet it was in reference to it that I said just now that no plan of treatment had yet been decided on which generally proved successful; for this mode must be considered more in the light of a palliative than a curative remedy; the obstruction frequently returning when the style is removed. It sometimes happens that from disease about the bones of the nose, a fistulous opening from the sac to the nose is formed. If you should operate in such a case, you must introduce a sharp-pointed instrument, either a probe or trocar, through the fore part of the os unguis into the nose,

and the only point which remains is to keep open the perforation by a sponge tent, or nail-headed style; but it becomes rarely necessary to perform this operation. I have now, gentlemen, concluded the subject of diseases of the eye.

LECTURE XXXVIII.

ON URINARY CALCULI.

THESE are found in four different situations in the urinary organs, viz. in the *kidney*, *ureter*, *bladder*, and *urethra*.

The calculi which are discovered in the prostate gland are not, in general, of the same kind as those met with in the organs which I have just named.

CALCULI IN THE KIDNEY.

When a calculus is situated in the kidney, there will be felt considerable pain in the loins, in the vicinity of this organ, and occasionally it will be so very acute, and the part so exquisitely tender, that the afflicted person cannot allow even the slight pressure of a clothes-brush over the loins. A physician of my acquaintance informed me that he had witnessed a case of this description, in which the only symptom that served to illustrate the nature of the disease, was the extreme tenderness felt in the loins, and it was so severe that the patient could not suffer his clothes to be brushed over the part; upon examination of his body, after death, a stone was found in the kidney.

When a calculus is situated in the kidney, it is often accompanied by a numbness of the intestinal tube leading from the kidney to the navel. There will likewise be felt great pain when in the act of stooping, with frequent inclination to make water. The urine is frequently of a dark colour, from being mixed with blood; when this appearance is present, coupled with excruciating pain round the loins, it will generally happen that the stone is then in the act of descending, and in a few days afterwards you will probably find that it has entered the bladder. When a calculus is in the kidney, the stomach is usually very much affected, and frequent vomiting is the consequence. The urinary bladder is often, from the same cause, rendered exceedingly irritable; and all means that could be devised have been known to fail in procuring relief from this troublesome symptom. An example of this kind occurred when I lived in the city; a surgeon called, and requested me to see a boy, a patient of his, who had an extremely irritable bladder; he stated that he had tried every medicine he could think of, and yet could not

produce the slightest mitigation of the boy's sufferings. I saw the child, and prescribed for him; but with as little effect, and he ultimately died. I met the practitioner a short time after, who told me that, upon a post-mortem examination, the pelvic, abdominal, and thoracic viscera were all healthy, with the exception of one kidney, in which was found a calculus. I have known a stone in the kidney cause severe pain at the anterior superior spinous process of the ilium.

In cases of calculi in the kidney, nature generally makes attempts to discharge them through abscesses formed in the loins. I had three calculi in my possession, which were discharged in this manner, and as they came directly from the kidney, I was anxious to learn the nature of their composition. I therefore sent them to the late Dr. Marcet, who, upon analyzing them, found that each was composed of the triple or ammoniaco-magnesian phosphate.

Calculi in the kidney sometimes produce such a derangement of the constitution, as to occasion the destruction of life; and, upon dissecting persons who have been thus destroyed, the calculi have been met with in various parts of the kidney, in the tubuli uriniferi, infundibula, and in its pelvis. Sometimes calculi in the kidney are modelled to the internal form of that gland. It happens thus—when the stone has become of sufficient bulk to fill the pelvis, projections branch off from its body into the infundibula, acquiring the character which you here observe (holding up a preparation.)

It is not uncommon for a calculus to occasion an absorption of the glandular substance of the kidney, and a stone lodged upon the beginning of the ureter has been known to have produced so complete an absorption of the glandular structure, that no more than a thin membrane has remained.

When both kidneys are affected at the same period, or if they successively become destroyed, in either case death must ensue.

TREATMENT OF CALCULI IN THE KIDNEY.

But little can be accomplished by the medical man in these affections; when the stone, however, is composed of uric acid, the exhibition of potass or soda is, I believe, attended with considerable advantage; not that either of these medicines will dissolve a stone when once formed, but I am inclined to believe that they prevent the further deposition of uric acid; they most decidedly lessen the irritability of the urinary organs—and by covering the surface of the stone with a sort of mortar, it becomes much less annoying to the patient, and much

less irritating to the part in which it is contained. Beyond these effects I think lithontriptics have no power.

Surgical writers have proposed that stones in the kidney should be removed by the knife. I am not aware, however, that such operations have been performed. Mr. Cline, sen., once informed me that he had a patient under his care, in whose kidney he could distinctly feel a calculus. This person was remarkably thin, owing to which circumstance the stone was discoverable by means of an external examination: an individual so situated, if his constitution were in a healthy condition, might successfully undergo the operation, otherwise it would be too much for his system to bear. Nature, as I before observed to you, will often effect a cure by the formation of abscesses—the calculi being permitted to escape through the sinuses which they create. Through these openings, by means of a probe, you may readily feel the calculus; and to prevent the closure of the sinus by granulations, you should introduce a sponge tent. In order to facilitate the discharge of the stone, you may dilate the sinus by means of a bistoury; there will be no danger in doing this, for the emulgent artery and vein are situated behind the calculus. Well, this is all that I have to say respecting stone in the kidney, and I shall proceed to the consideration of

CALCULI IN THE URETER.

When the stone has descended into the ureter, there will be felt great pain at the spine of the ilium, at the anterior superior spinous process, in the course of the psoas muscle, and over the surface of the abdomen; as the calculus passes along the ureter, at the time it crosses the lumbar plexus, there will be experienced very, very great uneasiness in the groin, and in the course of the anterior crural nerve down the thigh; when it goes over the spermatic plexus, the cremaster will be spasmodically contracted, and there will be felt severe pain in the testicle; the stomach will likewise be particularly irritable, and continually eject its contents; the skin covered with cold sweats, with a death-like paleness of the countenance; the pain is not constant, but comes on at intervals; after continuing for some minutes, a complete remission occurs, and you therefore suspect that the stone has passed; after a lapse, however, of ten or fifteen minutes, it returns with as much severity as before. I have known an instance in which the violence of the pain was so great from a calculus in the ureter, that the patient absolutely laid down on the ground, and rolled about, so intense was the agony, and though not more than a quarter of a mile from his residence, he was under the necessity of being carried to his house by the servants. The symptoms

which have been just mentioned, teach you, most unequivocally, that a stone exists in the ureter.

It not unfrequently happens that nature fails in her attempts to relieve; the disease then necessarily terminates in the destruction of life. One case of this kind has been witnessed by Mr. Hallam; matter and urine were for a considerable time discharged by stool, but from what cause could not be imagined; when the individual died, upon an examination of his body, a stone was found impacted in the ureter; the colon and ureter were united by means of the adhesive process, and an opening, about three quarters of an inch from the kidney, had been made from the latter into the former, which satisfactorily explained the origin of the pus and urine evacuated from the intestines before death.

Here is a preparation (showing one to the students) which was taken from a boy who had been successfully operated upon for stone in this hospital, by Mr. Cline, sen.; in a short time subsequent to the operation, the lad suffered from severe pain in his loins; this was quickly followed by rigors, and lastly death; when his body was examined, a stone was discovered in the ureter. A woman once came to my house, complaining of a most lancinating pain in the belly and loins, together with excessive vomiting. I told her that she was much too ill to be absent from her house, and advised her instantly to return home and send for her medical attendant. In company with this gentleman, I soon afterwards saw her; at the expiration of three days she died. When we afterwards examined the body, the instant the surgeon cut into the abdomen, there issued through the opening a strong urinous smell; on prosecuting the examination, we found a stone lodged in one of the ureters; this obstructed calculus had given rise to an abscess, which had burst into the cavity of the abdomen, whence arose the almost sudden dissolution.

But it every now and then happens, that calculi of the ureters will escape without proving destructive to life. Mr. Stone, a surgeon in Sussex, had a carter in his neighbourhood, to whom such a result happened—the man for a long while felt a severe pain in the direction of the ureter—at length an abscess formed upon the spine of the ilium, and when it broke there was discharged through the opening this calculus (showing it to the class). From its figure it is evident that it was formed in the ureter; the man ultimately did well.

Now, gentlemen, of the

TREATMENT OF CALCULI IN THE URETER.

During those violent paroxysms of suffering which I have detailed to you, the patient should be bled to syncope—you should give him

opium: potass may also be administered with advantage, for I do believe that it lessens the irritability of the urinary organs, and in this manner will afford considerable relief; the person should also be put into a warm bath, and when in that situation, the surgeon should sit by his side, and rub the abdomen in the course of the ureter; for the urine having collected above the stone, and its vis à tergo being insufficient to push the calculus onward, friction, properly directed, will prove of great service by its mechanical influence on the accumulated fluid, and it will be found agreeable to the patient rather than otherwise. Well, then, the plan to pursue is, to bleed, with a view of preventing inflammation; to give opium and potass, for the purpose of diminishing pain and irritability, and mechanically to assist the passage of the stone by rubbing the surface of the abdomen in the course of the ureter.

CALCULI IN THE BLADDER.

The next situation in which calculi are formed is in the bladder; and as much can be done in this complaint by surgical treatment, we shall dwell more at length on the circumstances attending it, and describe to you the operation required for removing a stone from the bladder. Directly a stone enters the bladder, the symptoms change; there will be a pain along the urethra, extending from the neck of the bladder forwards, though this is not always present; but opposite to the frænum, about an inch from the extremity of the penis, there is always considerable pain: and the patient walks with difficulty, with slight pain at the end of the yard. Some persons will come into your room, sit down, and say that they think that they have a stone in the bladder, and talk lightly of it; but you may depend, gentlemen, that they have no such thing; the pain felt opposite to the frænum, in cases of stone of the bladder, is as if a knife was running through the penis, and they will describe it as a deep-seated pain. It is different in degree in many cases, some being exceedingly irritable, others being much less so—but the pain is generally very severe. Very little urine can be kept in the bladder, and the patient feels a frequent disposition to void it. Pain opposite to the frænum, and a frequent disposition to void the urine, are symptoms attending stone; and if there is much irritation, bloody urine will be voided: indeed this is a constant concomitant, and is a symptom you should particularly inquire for: it is not always present in the very young, but in adults, and those who have been afflicted with stone for a long time, this symptom will be met with. Where persons who have stone cannot ride on horseback without being obliged frequently to dismount and void the urine—what you find is this, they go a short distance, then are obliged to stop and get off, and discharge their urine,

which is bloody. If they ride in a carriage it is the same; they are obliged to stop and get out—and if they are in the company of friends, and wish to conceal it from them, the desire to void the urine is so great, that they are obliged to sacrifice their natural delicacy of mind to the irresistible call of nature. The urine is not changed unless there is much irritation in the bladder; but if the stone has been of long standing, and there is disease in the bladder, there will be clots of blood in the urine. When the mucous membrane of the bladder is affected, the urine will be white, which will show that the bladder is diseased; there will also be flakes of matter in it, and when this is the case, the patient is in a state that would be improper for an operation. There is a sudden arrest of urine during the flow of a full stream, in consequence either of a valve formed in the urethra, or the stone resting against the neck of the bladder. The diagnostic symptoms of stone in the bladder are pain towards the extremity of the penis, opposite to the frænum, discharge of bloody urine; sudden arrest of the water during the flow of a full stream, and a frequent disposition to void the urine, and pain in doing it, particularly in the erect position. Persons with stone are frequently obliged, when they make water, to rest their heads against something, to bend their arms and legs, and thus discharge their urine. There is a disposition also to void the fæces at the time of making water, as the rectum obeys the motion of the bladder. In some cases the abdominal muscles are affected with violent spasms. First, persons are affected with violent spasms of these muscles—then have disease of the mucous membrane of the bladder—and frequent shiverings. This is so common a symptom occurring with stone in the bladder, and is so well known, that it will be unnecessary to dwell on it. One curious circumstance, generally observed when there is stone in the bladder, is an elongation of the prepuce, particularly in boys. This is singular, and not easily explained, unless it is produced by pressure on it when the pain at the extremity of the penis comes on; for as the pain in this part is an exceedingly distressing symptom, and pressure on the nerve deadens it, it is made, and the prepuce thus becomes elongated by it. Having thus gone over the symptoms of stone, we shall now say a few words on the size, number, form, &c. of stones found in the bladder. Calculi are formed in the bladder around some extraneous body, which gets into it, and which is the nucleus, or about clots of blood; or the stones pass from the kidneys through the ureters, and enter the bladder. Some stones are composed of concentric lamellæ, while others are not; in those which are, layer after layer is deposited and adheres, but the lamellæ are composed of much firmer materials than the bond of adhesion which unites them. The nuclei, around

which stones form, are various; here is one (exhibiting it to the class), as you see, composed of a needle; you will say, no doubt, that this must have been swallowed, and that, passing through the intestines, it entered the bladder through the rectum. I will tell you how it got there. A nurse, who had the care of a child, put it to sit on a mat upon its naked bottom, and it immediately began to cry; when the nurse, out of humanity, I suppose, took it up, and danced it well in her arms; the more the child screamed, the more the nurse danced it. A few months after this it had symptoms of stone, and it was ascertained that there was one in the bladder. I cut the child, and took from it this calculus, with a nucleus formed of a needle. The needle must have penetrated the perineum, or the nates, and by this means reached the bladder. Here, gentleman, is a slate-pencil forming a nucleus. I will give you the history of the case. A man came to me, whilst I was living in the city, and said that he had a slate-pencil in his bladder; considering him to be mad, or wishing to impose, or that it was for the purpose of a quiz, I said very well, and prescribed something for him, and sent him away. About a fortnight afterwards this man came again to my house, and said that he had a slate-pencil in the bladder, and if I thought it a trick, I could examine him; this I did; I passed a sound, and found a stone. I then said, how came the pencil there? "Why, Sir," he replied, "I have had a stricture for some time, and have used bougies a good deal; but one day, not being able to pass one, I thought that I would try something that would be strong enough, and therefore introduced a piece of slate-pencil, which broke in the passage, and part of it got into the bladder." I told him that he must submit to an operation, in order to have it removed; and being a pauper, I advised him to go to an hospital, where proper care and attention would be taken of him. He came to Guy's, where I operated on him, and took the pencil from the bladder. The stone which had formed round it is the triple phosphate; this kind of stone usually forms where there has existed much irritation in the bladder. Here is a piece of metallic bougie, or catheter, round which a stone formed. I will mention here, as I may not have an opportunity again, that pewter catheters should not be allowed to remain in the urethra more than a week, as the urine acts on the materials of which they are composed, makes them brittle, and if left in the urethra beyond the time I have mentioned, are very apt to break, and then enter the bladder. Stones form round them, as in the case from which this specimen was taken. I have known several examples of this. Here is a curious specimen of a calculus formed round a piece of tobacco-pipe, which got into the bladder in rather a curious manner. It was sent to me by Mr.

Godwin, surgeon to the Derbyshire Infirmary; the section has fortunately been made through the centre; one-half Mr. G. kept for himself, and the other part he was kind enough to send me.

You see that an extraneous body in the bladder forms a nucleus for a stone. The stone will be composed of the triple phosphate or of uric acid, according to the degree of irritation which has been kept up; if it has been considerable, the stone will contain the triple phosphate.

The next circumstance to which I shall advert is the number of calculi found in the bladder. I do not think that the patient is in greater danger in an operation, from a larger number of stones being in the bladder, or even so much, as when there is only one large or moderate-sized stone. —The introduction of a pair of forceps into the bladder, for removing one or more stones, is not dangerous; but the great danger, gentlemen, is, if the parts are bruised, and cause of irritation produced. Here are nine calculi that were taken from one person; but this is not a great number. Here are 37. The largest number that I ever took from one person is 142; it was from a gentleman of Worcester; he survived the operation, and I operated on him again; all the calculi consists of uric acid, or at least those which have been analyzed do, and the others appear to be composed of the same. It was this case which led me to say just now, that the introduction of the forceps for removing a stone is not dangerous; for at the first operation I introduced the forceps seventy times, sometimes withdrawing them without a single calculus, at others with three: after the operation he suffered very little; for the introduction of the forceps is not dangerous, but the danger arises from the bruise of the part, and from the violence used in extracting large calculi.

SIZE OF CALCULI.

The usual weight of calculi formed in the bladder is from half an ounce to two ounces; most frequently under two ounces. The largest I ever extracted is the one I now show you; its weight is sixteen ounces. After I introduced a pair of forceps, I was obliged to send for a gimblet, in order to bore it, but it was so firm that I could not. I succeeded, however, in extracting it by disengaging one blade of the forceps, using it as in midwifery, and then by bringing the stone under the pubes and above the os coccygis, I managed so as to remove it. Mr. Mayo, a surgeon at Winchester, extracted a stone fifteen ounces in weight, but that was broken. The largest stone that I ever saw extracted without its being broken, (at the same time the patient surviving,) is one that was taken from a person at the Norwich Hospital, it weighed eight ounces. But the weight and size of stones do not bear a relative pro-

portion, for some stones of considerable magnitude do not weigh much, whilst others which are small weigh a good deal. A very large stone, that was found in a body after death, weighed twenty-five ounces. There is one at Trinity College, Cambridge, which weighs thirty ounces; it is stated to weigh thirty-three ounces, but I believe thirty is the true weight. The stone of the greatest size and weight I ever heard of, was one taken from the body of a highly respectable individual, after death, by two eminent surgeons of this town. He had a paralysis of the lower extremities, and half of the body was insensible; in this state he was operated on for stone, but after various attempts at extracting it, the operation was postponed for a week, in order that some instrument might be obtained in the mean while, by which the stone might be broken. At the end of the week the operation was again repeated, but the stone was neither to be broken nor extracted, and the gentleman died from irritation. On examining the body after death, there was found a large stone in the bladder, which there was a difficulty of raising from its seat; it could not have been extracted if the high operation had been performed; it weighed *forty-four* ounces, and a slight addition, how many grains or drachms I am not exactly sure.

LECTURE XXXIX.

In the last evening's lecture, gentlemen, I began to describe to you the subject of the formation of calculi, the different species of calculi, and the symptoms which attend them. I shall now proceed with this subject. The pain which a patient experiences from stone in the bladder is by no means in proportion to its bulk. It is not exactly in the inverse ratio to its magnitude, but still it approaches that inverse ratio. When a stone becomes excessively large, the patient generally loses the power of retaining his urine, and the distillation of urine from the bladder prevents that contraction of it which occasions so much pain to the patient in discharging the last drops of it. Doctor Franklin, the celebrated American philosopher, who died of this disease, suffered excessively for a number of years from it, but at last, when the stone acquired considerable magnitude, he experienced but little pain. The pain does not so much depend on the form of the stone as on the general irritability of the patient, and especially on irritability of the bladder. Thus you will sometimes in performing the operation find a stone excessively pointed, where the patient complains of but trifling symptoms; and, on the other hand, when the stone is perfectly smooth, the patient suffers extreme pain. The pain, therefore, depends more on the irri-

tability of the bladder and the constitution of the patient, than on the form or surface of the stone; *cæteris paribus*, however, rough stones will give the greatest degree of pain.

There are four different kinds of calculi, when chemically examined. A very nice examination may lead to further discoveries on this subject; but at present we are only acquainted with four species. The first is the uric acid, which is a common, but not the *most* common form of calculus. The second is the triple phosphate, or ammoniaco-magnesian phosphate; the third species is the mulberry, or oxalate of lime, an excellent specimen of which occurred the other day in the boy at the other hospital. The other species was lately discovered by Dr. Wollaston, a most admirable chemist, and one of the first philosophers of the age, who developes every subject to which he applies his active and powerful mind, with an extraordinary degree of minuteness and accuracy. In examining the different calculi, he discovered the species which I am now mentioning, to which he gave the name of the cystic oxide. With respect to the uric acid, it is distinguished by concentric lamellæ, and when cut has the colour and appearance of wood. (The learned professor exhibited a specimen to the class.) It is soluble in alkalis, and alkaline medicines are therefore commonly recommended for this kind of stone.

The second species is composed of triple phosphate, or ammoniaco-magnesian phosphate. It is of a greyish white colour, and not so distinctly laminated as the uric acid. It is not soluble in alkalis, but it is acted upon by the acids; on the application of the blow-pipe it becomes vitrified. It is acted upon by the acids, but not in any considerable degree. A quantity of matter resembling mortar, which is, in fact, the ammoniaco-magnesian phosphate, is generally passed from the bladder. and the urine is highly offensive. I mention particularly these appearances, because this stone is constantly liable to be reproduced after the operation is performed, which is not the case with the uric acid stone. I will mention a case, which made a strong impression on me in earlier life, showing the readiness with which the triple phosphate is reproduced. A gentleman came to me from Southampton with stone in his bladder. I operated upon him, and removed a triple phosphate calculus. He came to me again twelve months after, with symptoms of stone. I sounded him, and distinctly felt a stone; a consultation was had upon his case, and it was deemed advisable that the operation should not be performed. He went back to Southampton, where, after suffering extremely from the stone, he had it removed from the bladder, by Mr. Lightford, of Manchester. The stone was of such magnitude

that it was at first supposed that I had removed one stone, and left another in the bladder. A little time after the second operation, however, he began again to complain of symptoms of stone; he died a few months after, and upon examination after death, three calculi, as far as I recollect, were found in his bladder. When I perceive the appearances which I have described to you, namely, the substance resembling mortar, which is in fact the ammoniaco-magnesian phosphate, I generally dissuade the patient from submitting to the operation. Another case, illustrating the rapid reproduction of the triple phosphate, strikes my mind at this moment. I removed a stone of this kind from a gentleman who came to me from Liverpool. A short time after he began to complain of symptoms of stone, and upon sounding him I felt the instrument moving in a quantity of calculous concretions. He suffered extremely from this second formation of calculus, and requested himself that the operation might be again performed. I performed the operation, and removed a quantity of triple phosphate mixed with a large portion of coagulated blood. He recovered also from this operation, but before he left town to return to Liverpool the same material formed again in his bladder: I introduced a pair of forceps for the extraction of small calculi, and extracted eight portions of triple phosphate from his bladder. Whenever you observe the symptoms of triple phosphate calculus, be upon your guard against performing the operation, until you have corrected the disposition to its reproduction in the manner which I shall point out to you when I come to speak of the medical treatment applicable to calculous affections. The mulberry calculus, which consists of oxalate of lime, is, to a certain degree, soluble in the acids; it will be proper, therefore, to give in these cases muriatic or sulphuric acid; the muriatic acid is generally preferred. The cystic oxyde has the appearance of brown sugar in a state of crystallization; it is not composed of concentric lamellæ. A stone from the kidneys has been analyzed by Dr. Marcet, and found to be of this species, but the opinion once entertained, that it is formed in the bladder itself, is not correct. Mr. Brande has analyzed 150 calculi, in order to ascertain the relative portion of materials in each species. The result of this analysis, as far as my memory bears me out, was as follows:—of the 150 calculi, sixteen were uric acid. This led me to remark, that uric acid were not the most common; they occur in the proportion of sixteen in 150. Forty-five were composed of uric acid in considerable quantity, with triple phosphate in a smaller proportion; uric acid *plus*, and triple phosphate *minus*. Sixty-three were composed of triple phosphate in a larger, and uric acid in a smaller

proportion ; triple phosphate *plus*, and uric acid *minus*. Twelve were entirely triple phosphates ; five were composed of uric acid with a nucleus of the phosphate of lime, and six were mulberry calculi.

The analysis stands thus :—

Of 150 calculi

16 . . . . —— were uric acid

45 . . . . —— uric acid *plus*, triple phosphate *minus*

66 . . . . —— triple phosphate *plus*, uric acid *minus*

12 . . . . —— triple phosphate

5 . . . . —— uric acid with a nucleus of phosphate of lime

6 . . . . —— mulberry calculi

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150

With respect to the medical treatment of calculi, when a person says to me, "I think I can dissolve a stone by some chemical menstruum," my features, which are more disposed to the risible than the solemn, are apt to give way ; I generally smile. The menstrua employed for the purpose of dissolving stones in the bladder, undergo so much alteration before they reach the cavity of the bladder, that they can have very little influence on a stone which is already formed. Nay, I can tell you more, if those very menstrua be injected directly on the surface of a stone existing in the bladder, the stone will still remain undissolved. I witnessed an admirable case in the other hospital, which was kept for a length of time under a dresser of mine, who was very chemically disposed, and who thought he could dissolve the stone by the injection of the menstrua best adapted for that purpose. He did so for a long time, and taught the man to inject these menstrua into the bladder himself. I used, in going through the wards, to say to this man, "Well, are you any better?" The man shook his head. After a time, however, on my repeating this question, he replied, "Yes, Sir, I am better." "Oh, you are," said I, "how does that happen?" "Why, Sir," said the man, "I have learnt to inject opium into my bladder, and this gives me great relief, though I cannot say that any thing I previously tried did me any good." The opium tranquillized him at first, but after a time it lost its influence, and this man died of an ulcerated bladder. The whole internal surface of the bladder was ulcerated, and covered with stalactites of triple phosphate. So much for injecting menstrua into the bladder with a view of dissolving the stone: still less influence can those menstrua have on the stone when taken internally, and altered as they must be when carried through the circulation, and passing through the process of secretion before they reach the bladder. But though medicines cannot dissolve the stone, they will do good by

diminishing the irritability of the bladder. This is strongly illustrated by the following case:—Some years ago I happened to be in Norfolk, at a public breakfast, when I asked the lady of a naval officer, how it happened that the admiral was not there? She informed me that he was very ill, and wished me to call upon him. I found him lying on his sofa, suffering under the symptoms of stone, and upon introducing a sound, I chipped off a portion of calculus, which he passed a short time after. I sent the calculus to Dr. Marcet, who, upon analyzing it, found it to be of the mulberry kind, that is, oxalate of lime, and accordingly advised me to order the patient muriatic acid. I was happy to take the advice of Dr. Marcet, upon whose judgment I had the fullest reliance; but the patient derived no benefit from the muriatic acid, and I therefore advised him to take a drachm of the subcarbonate of soda four times a day. A considerable time after, on going to a consultation on the case of the Duke of Portland, at which Sir Everard Home, and Dr. Reynolds were present, Dr. Reynolds said to me, "So you have cured Admiral ——— of his stone." I smiled, and observed that I had removed a good many stones, but that I had never cured any body of that disease. "Why," said Dr. Reynolds, "Admiral ——— tells me, that since he has taken a medicine you recommended to him, he has been so well, that he has been able to go down to a Court Martial; 'and if,' added the Admiral, 'you can find me a pretty girl, Doctor ———, why, I could dance down five-and-twenty couple with her. (*Much laughter*). 'I have continued,' said the Admiral, 'to take a drachm of subcarbonate of soda four times a day; though the stone falls over the neck of the bladder, I no longer feel any pain, and if you were to ask me now to submit to the operation, I would snap my fingers at you.'" It appears, therefore, that though medicines cannot dissolve the stone, they may lessen the irritability of the bladder, and greatly mitigate the sufferings of the patient. The soda diminishes the stimulating influence of the urine; it may also coat the surface of the stone; if it do, so much the better.

The following case affords a remarkable instance of the influence of the acids in altering the character of calculi, by acting on the surface, and diminishing irritability. A gentleman from Birmingham consulted Dr. Baillie and myself, on account of his passing a large quantity of triple phosphate with his urine. He was recommended to take muriatic acid, and three days after he had taken it, the triple phosphate had entirely disappeared, but the uric acid was substituted for it, in as large quantities as the triple phosphate. As long as he continued to take the muriatic acid, he made uric acid; but when he left it off, the triple phosphate was re-produced; but whether he made the triple phosphate

or uric acid, there was no diminution of the secretion from the kidneys in point of quantity. The acids, therefore, will alter the character of the calculus, by acting upon its surface, and diminishing irritability; but they have no power of dissolving the stone in the bladder. This gentleman was relieved from the calculous secretion from the kidneys, by attention to his general health, and not by any medicines given with a view to the calculus. The liquor potassæ conjoined with opium has considerable effect in diminishing irritability; and it should be given for some time before the operation for stone. This medicine h. a very beneficial effect on children who have stone in the bladder, and pass a large quantity of matter; it will remove this excessive secretion, and enable you afterwards to perform the operation with success.

Some little benefit may therefore be derived from medical treatment, by lessening the irritability of the bladder and constitution, but the stone will remain, and surgery alone will be the only effectual means by which the sufferings of the patient can be removed.

OPERATION OF LITHOTOMY.

We shall now proceed to speak of the operation for stone, of the lateral operation, together with the high operation, and shall also show you a forceps for removing calculi from the bladder, when they are small, without having recourse to any cutting operation. And first I shall describe the lateral operation; I shall not perform it this evening, for I don't know whether there is a subject or not, but I shall state to you the circumstances to be attended to before the operation, give you a description of the instruments required, and perform the operation on the next evening.

The first circumstance to consider before you operate for lithotomy, is whether the constitution of the patient is in a sound state, or his general health good. He who practises surgery must know that if an operation were performed as soon as the symptoms of stone arise, without first inquiring into the state of the patient's constitution, the surgeon would lose a great number of his patients, and soon injure his character; there is no operation in which an attention to the constitution is more necessary before it is performed than that for the stone. The person should be in good general health at the time, for unless he is, there will be little chance of success. Those who have been exposed to the vicissitudes of life and to poverty, and have been obliged to labour for their bread, generally bear the operation for stone well, and in those persons the chance of success is considerably greater than in the higher ranks of society, and those you generally meet with in private practice. Let any man be honest, and he must acknowledge that in hospital practice, there

is infinitely more success than in private practice; for those who have been reared in the lap of luxury, and have drunk freely, if submitted to an operation for stone, frequently die from it. Therefore, with respect to the higher orders of society, unless a surgeon previously study the constitution, and require his patients to live differently from what they have been accustomed, he will injure his reputation, and lose his patients. Great advantage will be derived from putting a patient, who is to be operated on for stone, on vegetable food, a short time beforehand; it is not right that he should be on full, or animal diet. It is also improper to operate on a patient as soon as he is admitted into the hospital; the surgeon should wait, and have the patient prepared by giving him vegetable food, and also sounding him frequently; the introduction of the sound accustoms the bladder to irritation, and when it has been done pretty often before the operation is performed, the patient bears it infinitely better than when he has been operated on without it. You should also inquire whether there is any local disease of any organ; the kidneys sometimes becomes altered, when there is stone in the bladder. A man came to Guy's hospital having a stone in his bladder. I sounded him, but there was matter on the sound when I withdrew it; I said to the gentlemen present, that the man would not bear the operation, and on that account postponed it. In three weeks after this man died, and on examining the body, the two kidneys were found in opposite states; one was one-third or one-fourth smaller than natural, and the other was double its original size; they are both preserved in the museum over the way. The patient would have died, if I had performed the operation on him, from the disease of the kidneys, and then I should have had the discredit of killing him. If the bladder is ulcerated do not perform the operation on any account, for it will not be successful. But especially never submit a patient to the operation for stone, if there be the slightest affection of the chest—the least difficulty of breathing—any signs of asthma, or any irregularity of circulation. No person who has any regard for the safety of his patient, or his own reputation as a surgeon, will ever operate for stone, unless the chest be free from all complaint. You hear of one surgeon being exceedingly successful in the operation for stone, and of another less so. The cause of it is this, the one is careful to select his cases: he puts aside all those who have any other affection, and tells them to wait, and only submits those to the operation who are free from any other disease. This is judgment, and it is right: unless the patient is suffering exceedingly from the stone, you should not operate until he is free from every other complaint.

As to the age at which the operation may be performed.—Some say,

when a man advanced in years has a stone, that he is too old to undergo an operation, and the patient himself often says that he is too old; but this is not the case, and age is not an objection to its being performed. The time of life which is best fitted for this operation is about sixty-one or sixty-two, and at this period a great number of cases occur. After the age of twenty the danger of the operation increases, but between sixty and sixty-three more cases recover than at any other period; at least this is what I have seen. If a patient is loaded with fat, there is always danger from peritoneal inflammation. As to advanced age, Mr. Cline, sen., has operated on a patient eighty-two years of age; Mr. Attenburrow, of Nottingham, has operated on a person of eighty-six. I have operated on a patient of seventy-six, but never on one older; this patient lived twelve years afterwards, and died at the age of eighty-eight; therefore, old age is not an objection to the operation, unless there is an enlargement of the prostate, when you must not operate. With respect to the very young, they are in considerable danger from the operation. I mean children before they are four years old. After four they acquire strength, and the irritability of the constitution is much lessened; under this age convulsions frequently come on after the operation; and in three days the children often die, more especially if they have lost much blood at the time of the operation. I have operated on a child of one year and nine months, and it has recovered; but very often indeed do convulsions come on after the operation for stone in the very young, which in most cases terminate existence. With regard to the success of the stone operation, it is quite certain, if the accounts published be correct, that the success lately has not been so great as it used to be. Of Cheselden's operations, if I recollect aright, only four in fifty-six failed. Mr. Martineau, of Norwich, has operated for stone with most extraordinary success. He has published a paper in the *Medico-Chirurgical Transactions*, which is well deserving your attention; no surgeon in London, I am certain, can boast of similar success. The degree of success which is considered the most correct, is that taken from the result of the cases at the Norfolk and Norwich hospital. When I was there, there were between two and three hundred cases registered; all the calculi were preserved, together with an account of the different operations performed for the removal of each, and I then took an opportunity of ascertaining what was the result of these cases. Since that time a more detailed account has been given by the late Dr. Marcet, in his work on calculi, from which it appears that *two* in *fifteen* died. Well, gentlemen, this is the result of the practice of the Norwich and Norfolk hospital. Although I stated to you just now the result of the practice of two individuals (Cheselden and Mr. Martineau), take care

how you draw any deduction from particular cases. I, and many others also, have, for a length of time, met with extraordinary success in operating for the stone, when four or five unsuccessful cases in succession have come, which have generally brought the result to the amount I mentioned, viz., that *two* out of *fifteen* die. I should say, when it is stated that one in twelve only died formerly, what operator now is more successful than this with the greatest care, even with a selection of his cases, and with very extensive experience? Patients should not be sent away from the hospitals before they are quite well, for if they are, and they die, then the death of the patient is attributed to the operation.

INSTRUMENTS USED IN LITHOTOMY.

What you require for the operation is a table, about two feet six inches high, and bandages to fasten the hands to the feet, and to draw the knees towards the body; you should give the patient an injection the day before the operation, and the rectum should be completely emptied, otherwise it will be in danger of being opened in the operation.

The first instrument that it will be necessary to consider is the sound; this should be of a large size. The sound, however, should be fitted to the size of the urethra; for if a small sound be used in a large urethra, or a large sound in a small one, the stone will very often escape being felt. You should sound the bladder, both when it is full and when empty. When a person comes to me with symptoms of stone, I order him to lie on some chairs, and sound him; but if I cannot discover a stone, I then ask him how long it is since he had made water; if he says an hour or two, I direct him to void his urine; and it has frequently happened that I have felt a stone as the water was discharging, when I had not been able to do it before. In these cases I use a catheter, putting my finger over the orifice, and moving the instrument across the bladder; if the stone is not to be felt, I take away my finger, and then it frequently happens that, as the urine escapes, the stone strikes against it. Now, gentlemen, if a person says that a stone may be readily felt when it is in the bladder, I would ask any surgeon, who has had the least experience, to confess honestly whether he has not sounded a patient for stone, and has been unable to find one, when another surgeon has detected it in a moment. It happened to myself —it happens to all. A patient came to me who had been sounded twice by as good a mechanical surgeon as any I know in London (though, by the by, a mechanical surgeon is only half a surgeon), and the stone had escaped his observation, yet, on introducing the sound, I imme-

diately felt it. If there is an enlargement of the prostate, the point of the sound frequently strikes against it, or passes over it, and in those cases the stone commonly escapes being felt.

The next instrument required is the staff, and this should be as large as the patient can admit; let the groove be large and deep, which will lessen the danger of the knife or gorget slipping in its passage to the bladder: the larger the groove, the safer it will be. The staff should be a little more curved than the sound, and it will then serve as a director for the knife: for if it is not, you will be obliged to lower the instrument you are going to introduce, in order that it may reach the bladder. When you are about to cut a patient for stone, let the staff rest on the stone, and I will tell you why: I have seen too many instances where the gorget has not entered the bladder, and this has arisen from the staff not being in the bladder, but resting on the prostate, by which means the gorget has slipped, and passed between the bladder and rectum. The staff should be held perpendicularly, and should rest on the stone; then, when the gorget is introduced into the groove, it goes to the stone, and the forceps may be passed directly to the spot where it is. I again repeat, never let the staff rest on the prostate gland, but on the stone.

LECTURE XL.

OPERATION OF LITHOTOMY.

I BEGAN, gentlemen, towards the conclusion of the last lecture, to describe to you the instruments required to perform the operation of lithotomy. I stated to you the manner in which the bladder should be sounded, both as regarded its full and empty state, and that a stone could often be detected in one of those conditions when not in the other.

I told you not to use too large or too small a sound, and explained the reasons for such instruction. In alluding to the staff, I particularly advised you to employ one having a deep groove, whereby the danger of the knife or gorget slipping is materially guarded against. You were likewise instructed, when performing the operation of lithotomy, to let the staff rest on the stone. I have several times known where this maxim had not been attended to, that the gorget has not entered the bladder, and it arose from the circumstance of the staff having been permitted to rest on the prostate gland.

When you sound a man for a stone, I would advise you to be on your guard as to any queries respecting what you have discovered. Let your answers be rather equivocal and evasive than otherwise, for by a decisive

answer either in the affirmative or negative, your reputation may receive unmerited injury. The reason why you should be thus cautious, after what I stated to you in my last, must be sufficiently obvious, viz., from the well-known fact that a calculus may be detected by the sound at one time, and not at another; so that if, after an examination, you were positively to tell a person that he had not a stone in his bladder, and upon being sounded the following day by another surgeon he was as positively assured to the contrary, if it should prove in the sequel that you were wrong, the patient would lose all confidence in you, entertain opinions unfavourable to your professional talents, and report you to his friends accordingly. Be therefore on your guard.

In the lateral operation of lithotomy, you are to begin your incision a little on the left side of the raphe, immediately below the symphysis pubis, and carry it obliquely downwards and outwards to midway between the anus and tuberosity of the ischium, and the termination of the incision should be opposite the centre of the anus. Before you commence the incision, you should draw aside the raphe towards the ramus of the ischium on the right side. Never begin an operation without having first reflected well on what you are going to do; and in making incisions through the skin, you should, before you apply the knife, mark out with your eye the course which such incisions should take, and the precise point where they should terminate. Well then, the first cut through the skin, made in the direction just mentioned, penetrates the skin and cellular substance, and lays bare the accelerator urinæ; you then with the fingers of your left hand push or draw the bulb of the penis under the ramus of the ischium on the right side, so that the next incision will pass between the bulb and crus penis of the left side; there is no necessity in reality for cutting the bulb, and it should therefore be avoided; well, carrying your knife forward between the bulb and crus, you divide the accelerator urinæ, and this you should do completely, for if you permit any portion of its fibres to remain undivided, particularly at the upper part, if the stone should be at all large, you would find that their contractions would very much increase the difficulty of withdrawing the stone; as soon as the accelerator urinæ has been cut through, you expose the transverse perinei; you are then to feel for the groove of the staff with the nail of the index finger of the left hand, and having fully satisfied yourself of its situation, you are to cut into it through the membranous part of the urethra by means of the same scalpel with which you made the other incisions; and then, fixing the beak of the gorget in the groove of the staff, you are to bring down towards you the handle of the latter instrument, while at the same moment you push the gorget into the bladder, with its point

directed upwards, and its handle of course somewhat depressed. I give you this last direction for the purpose of preventing the dreadful accident of the gorget slipping and passing between the bladder and rectum, instead of its entering the former viscus; I shall say more of this unfortunate occurrence presently, and will now proceed to describe the gorget and knife.

Gorget.—The gorget, which was first employed in the operation of lithotomy, had no cutting edge, (here the learned professor exhibited it to the students, as he likewise did every instrument which he described in the course of the lecture,) as you perceive, and this instrument has one very great advantage over the cutting gorget, viz. its use does not endanger the life of the patient from hemorrhage, which, certainly, is a most important consideration; for no man who has practised much can say, if he speak honestly and truly, that persons do not sometimees die of bleeding after the operation of lithotomy. When the cutting gorget, as it sometimes does, divides the internal pudendal artery, if that misfortune be not attended to, the life of the patient becomes endangered from the chance of excessive hemorrhage. The blunt gorget had, however, a counteracting disadvantage of so much consequence, that its employment has been long since relinquished; it was the impossibility of making an opening sufficiently large for the removal of a stone of even inconsiderable magnitude. Cheselden, whose success was so great, was in the habit of cutting into the bladder with a knife. In consequence of the very great reputation which Mr. Martineau, of Norwich, has acquired for his lithotomy operations, I wrote to him, and requested the favour of a description of his instruments; in the account, however, which he was so kind as to send me, it did not appear that they differed from those in common practice. Depend upon it, gentlemen, that little deviations in instruments are over-rated and over-valued. The success of surgical operations arises rather from the manner in which the operations are conducted, than from any insignificant peculiarity which the instrument may possess. Those surgeons who are ever constructing new instruments and altering old ones, you may rely upon it, are deficient here (the learned lecturer touched his forehead)—[a laugh]; such individuals appear rather to be *surgical instrument makers* than *scientific surgeons*; and in their ridiculous inventions betray a littleness of mind, which proves them to be totally incapable of achieving any thing that is important—any thing that can add to our store of useful knowledge. The less complicated your instruments are, and the fewer you employ, so much the better; your operations will be executed with greater ease and expertness, and will prove much more successful in their issue.

Sir Cæsar Hawkins added to the blunt gorget its cutting edge; this was certainly an improvement; but if the instrument be too wide at the part where the prostate and bladder are divided, the internal pudendal artery will be in great danger of being divided, and this is an accident which you cannot too seduleusly avoid.

The gorget that I am in the habit of using has its cutting edge continued only *part* of the way back, in consequence of which, I know the exact size of the opening that is made into the bladder, and it is an effectual safeguard against wounding the above artery. In using the gorget, great attention should be observed to prevent its slipping between the bladder and rectum; it is a most horrible accident, and most horrible in its consequences. In mentioning cases, gentlemen, in this theatre, I wish you distinctly to understand, that I never refer my remarks to any particular case, unless I especially direct your attention to it, when my meaning cannot, of course, be misinterpreted. I am induced to make these observations at the present moment from a feeling that, by possibility, my words may be misapplied, and that, while alluding to the unfortunate occurrence of the gorget slipping between the bladder and rectum, that you may have imagined I was directing your notice towards the late unfortunate operation at Guy's, where the prostate was so enlarged that the stone could not be removed, and where it was supposed at the time that the gorget had not entered the bladder. The gentleman who performed that operation was ever most anxious to discharge his duty with ardour and with zeal; his honourable conduct and gentlemanly deportment caused him to be sincerely esteemed and respected by his colleagues, and his resignation, from ill-health, to be deeply regretted by his brother surgeons.

If I were to be asked how many times I had known the accident of the gorget's slipping and passing between the bladder and rectum happen, I should say at least a dozen, and in each case the most lamentable and fatal consequences ensued; for the operator lays hold of the stone, bladder, and all—the forceps slip; he lays hold of the stone again enclosed in the bladder, in the same manner, and thus continues to pull, bruise, and draw the bladder, till at length the patient is carried back to his bed without the extraction of the stone. Violent inflammation supervenes, from the violent bruising which the bladder receives, and in a few days the person is no more.

This untoward circumstance may be easily avoided, if you will be always sufficiently guarded to cut with your knife into the groove of the staff, then put your index finger nail into the groove, and keep it there until you feel its situation occupied by the beak of the gorget; be sure not to withdraw your finger until you are satisfied of this fact. Well,

having placed the beak of the gorget in the groove, take hold of the handle of the staff in your left hand, and bring it towards you; at the same time depress the staff so as to keep it decidedly within the bladder; when you bring forward and depress the handle of the staff, that is the moment for thrusting in the gorget, and this should be done in a direction upwards. Having satisfied yourselves that the gorget is in the bladder, withdraw the staff, and then along the hollow of the gorget introduce the forceps; be particularly cautious when you are introducing the forceps not to let the gorget recede, and so get out of the bladder; this frequently happens, and I will presently tell in what manner: it is a very awkward accident, and often leads to a great deal of difficulty in completing the latter part of the operation. I will now explain the mode in which it takes place. When the gorget is in the bladder, and you attempt to pass the forceps along its concave surface, their point becomes opposed by the prostate gland, and in using a little requisite force to get them into the bladder, if you are not very careful the gorget will be withdrawn; the forceps, consequently, will not enter the bladder, and the stone, together with the bladder, will be embraced by the blades of the forceps in the distressing manner just now explained to you.

If, upon introducing the gorget, considerable hemorrhage should arise, after the stone has been extracted, it may be checked, and entirely stopped, by keeping the patient cool, and by plugging the wound with sponge or lint: while there is any bleeding it would be highly impolitic to place the person in a warm bed, as the increased temperature would necessarily augment the disposition to hemorrhage. Do not apply ligatures to the vessels on account of these bleedings, as they often, under such circumstances, give rise to sloughings; you should not quit the patient until the flow of blood has ceased. If, therefore, you treat these bleedings properly in the manner now described to you, they will not be attended with danger to life from loss of blood, as the hemorrhage can be easily checked by keeping the body cool, and by introducing into the wound a quantity of lint or sponge.

Well, the gorget having been pushed into the bladder, the next step will be to pass in the forceps: in doing this remember what I told you a few minutes since respecting the resistance of the prostate and the occasional escape of the gorget from the bladder before the forceps are in its cavity. Before withdrawing the gorget you should strike the stone with the forceps, which act will dispel all doubt as to their not having entered the bladder.

Forceps.—The ordinary lithotomy forceps have their bend, or joint, two-thirds of their way forward. If the stone should break, you are then to use flat forceps. If it be a soft stone, or a number of small

ones, you may employ the scoop or crotchet. Having passed in this last instrument, and carried its point a little beyond the stone, you then pass in your finger to the farthest extremity of the instrument; the stone is then lodged between the point of the crotchet and your finger in the same way as it would have been between the blades of the forceps, had they been used. Well, so much for the operation of lithotomy, as performed with the gorget. Now then for that by the knife.

I do not like this instrument for the operation so well as I do the gorget, and I shall presently tell you why.

Another instrument for dividing the prostate and bladder has of late been used with success, in the lateral operation of lithotomy, it is called the *bistourie cachée*; it was invented by Cosme, a French surgeon, about one hundred years since; it consists of a knife, enclosed in a sheath, which, after being introduced into the bladder, and, turned with its edge downwards and outwards, cuts its way out when withdrawn.

I was myself for some years in the habit of using a straight scalpel, the same kind of instrument as you have lately seen Mr. Tyrrell operate with in this hospital. Mr. Thomas Blizard is said to have improved this instrument by making its blade longer and more narrow; it may be an alteration for the better, for aught I know to the contrary, for I am never so wedded to any thing of my own as not to be fully aware that other people's productions may be far superior.

Now, that young people may be readily and successfully cut with a knife, I can fully testify; for, without vanity, I may say that my experience in the operation has been considerable: I have myself cut twenty-four individuals for the stone in the course of one year, partly in private, and partly in hospital practice; have used both the knife and gorget pretty extensively; and I should hold myself exceedingly culpable if I did not fairly and candidly communicate to you the unalloyed opinions which I now entertain. Well then, gentlemen, I can tell you that the knife may be advantageously employed in children—in fact, you may cut a child with any thing, but not so old persons, in whom the prostate and bladder are often diseased, and all the parts extremely rigid: thus, upon such a prostate and bladder the knife makes scarcely any impression, and the opening through the prostate is exceedingly small; while, on the contrary, the external wound will be of considerable size, which may be accounted for from the obvious fact, that the force is greater near to the hand than at the point of the instrument, which is much farther from the moving power; you will consequently find, when you are performing the operation of lithotomy with the knife in old persons, having diseased prostate and rigid bladder, that you will not be enabled to make an opening sufficient to admit of the calculus

being extracted with that freedom which every scientific surgeon knows to be prudent. The danger in the operation consists in bruising the parts, and not in cutting them. Again, in deep perinei, when operating with the knife, you often think that the instrument has completely entered the bladder, when, probably, its point has scarcely reached the verumontanum: you are at a loss—are quite at sea—and cannot tell whether it has entered the bladder or not.

Well, gentlemen, the result of my experience has convinced me that, in old persons, the knife is not so good an instrument as either the gorget or the *bistourie cachée;* but in young people it may be used with perfect safety. I speak from what I have observed, and therefore speak confidently. I relinquished the use of the knife in the adult and old persons, because it did not succeed; and I feel perfectly satisfied, if at the commencement of your career you should indiscriminately employ it, that in the end, like me, you will discontinue its use in grown persons, and adopt it only in operations for children.

DIFFICULTIES IN THE OPERATION.

A large calculus is a most serious obstacle to both the performance and success of lithotomy; it is a difficulty of a horrible nature; and in consequence of the bruise which the neck of the bladder receives from the force necessary to be employed in its removal, generally proves mortal. There is no comparison in the danger arising from a number of small stones, compared with one large one: the small stones, if you are careful, can all be removed without doing any violence to the parts; but with a large one this is impossible.

Large stones, when connected with enlarged prostates, present difficulties much greater than when the gland is in a healthy condition. Here (handing the specimen to a student) is a preparation in which you have an opportunity of seeing the state of the parts under these circumstances. Operations on such patients are dangerous to the last degree; it is scarcely possible that they can recover from them; and the surgeon often falls into disrepute, most undeservedly, who happens to have the misfortune to meet with such cases. Some practitioners tell you that these cases would be successful if they were properly treated. These men are either fools or impostors, and the sooner they are kicked out of the profession the better. Such men pretend to uniform success, which claim, which pretension, to practitioners of experience and to men of honour, is only an exposure of their want of candour, and utter disregard of truth. I can assure you, gentlemen, that you will be sometimes successful, and sometimes not; only take care to study your profession with assiduity—to discharge its duties with fidelity—the taunts of your enemies wili not then annoy you, and

your minds will then be free from self-reproach. That which I teach you I know to be really true; I am no speculator; my arguments are the superstructure of facts; my deductions are from cases and occurrences which I have myself observed. In the faithful discharge of my duty in this theatre I am compelled to mention unfortunate as well as fortunate cases. I sometimes praise and sometimes censure; but in neither do I ever exceed that boundary which would be incompatible with my own honour or your improvement. In detailing to you the errors into which surgeons have fallen, I execute a very unpleasant task—a task much more disagreeable now, from the publicity which my lectures receive than at any former period; but, as your pilot, it is my imperative obligation to warn you against those shoals and rocks which have foundered but too many of your predecessors. He who publishes the lectures, however, cannot be too particular in his discretion with regard to publishing names, when those names are blended, as they sometimes are, with unfortunate cases.

I shall now proceed to show you the lateral operation, as performed with the gorget and knife, and will also show you the high operation above the pubes, as lately performed at St. George's Hospital. (A subject was now brought forward, and the legs having been placed in the proper position, the learned lecturer said,) Now then for the lateral mode; I will perform it first with the knife, and then with the gorget. (The lecturer now went through both operations according to the detail given in the course of this lecture; he demonstrated most carefully each part to the students as he proceeded, and thus addressed them.) The staff now resting on the stone, I begin by making an incision in the left side of the perinæum, commencing at the symphysis pubis, and carrying it downwards and outwards to midway between the anus and tuberosity of the ischium, the termination of the incision being, as you observe, opposite to the centre of the anus; this cut, having passed through the skin and fat, has exposed the accelerator urinæ. I now divide that muscle between the bulb of the penis and left crus; and then with my fingers press the bulb under the right ramus of the ischium, to prevent its being wounded. I now divide the transversus perinæi, and feel with the left index finger for the groove of the staff. I now cut into the groove at the membranous part of the urethra, and bringing down the handle of the staff, I push the knife forward into the bladder, and then cut through the prostate gland, and the neck of the urinary organ downwards and outwards, corresponding to the external wound. I again pass my finger into the wound, and feel for the groove of the staff; this instrument must now be withdrawn. I keep my finger in the bladder, and pass in the forceps with their flat side next to it; having with the forceps carefully felt for, and satisfied myself of, the situation of the

calculus, I grasp it within the blades, and thus withdraw it. All the first part of the operation with the gorget is the same as that with the knife; the staff being introduced, and the opening into the groove through the membranous part of the urethra having been completed, as you see it, I fix the beak of the gorget in the groove, and bringing the handle of the staff towards me I at the same moment push the gorget into the bladder with its point directed with a considerable inclination upwards; the staff is then withdrawn, and the forceps being passed into the bladder, along the hollow of the gorget, you remove the latter instrument, and extract the stone as before.

THE HIGH OPERATION, AS USED IN FRANCE, AND NOW OCCASIONALLY ADOPTED IN ST. GEORGE'S HOSPITAL.

The instruments employed in this operation are a probe-pointed bistoury, the *sonde-à-dard*, (a sound containing within it a dart or stilet,) and a pair of forceps similar to those I have just been using. Sir Everard Home has attached a net to one side of the forceps, as you here see it, so that when they are introduced into the bladder, you are to *fish* for the stone.

Well, I now pass into the bladder this *sonde-à-dard*, and by depressing the handle, endeavour to make its point project just above the symphysis pubis, in a line with it, and the linea alba—I now force on the stilet, and in this situation it makes its appearance. An incision must now be made about two inches in length in the direction of the linea alba, through the integuments down to the bladder, which is supported against the part by the point of the sound; and then, with the probe-pointed bistoury, make an opening into the bladder of the same size as the external wound. I now with the point of my finger hold the bladder against the edge of the wound, withdraw the *sonde*, pass down the forceps, and thus remove the stone. It is very easy, gentlemen; but I have seen quite enough of this operation.

A French surgeon, some time since, finding that a calculus was too large to be extracted by the lateral operation, immediately performed the high operation; he made a tolerably free incision, and upon seeing something he did not expect, exclaimed, "*Mon Dieu! voilà l'intestin!*" After some difficulty, the intestines were returned, and the Frenchman very coolly asked an English surgeon, who was standing by him, how long he thought the patient would survive? He received for answer, "Probably forty-eight hours." "*Oh, non!*" said the operator, "*vingt quatre au plus*," and truly the Frenchman was right, for at the end of twenty-four hours the patient was dead.

It has lately been proposed to remove stones from the bladder by performing the

OPERATION OF LITHOTOMY THROUGH THE RECTUM.

It is recommended, gentlemen, because it is simple—because it can be easily done; but notwithstanding this, I can tell you that it is a dangerous operation. I have known it performed but in two instances,—one patient died from inflammation of the rectum—and the other recovered, but with the dreadful misfortune of having a fistulous communication between the rectum and bladder. Be upon your guard respecting these pretty little—easy—simple operations; do not be misled by adopting them. Always reflect upon the nature of the parts on which you are going to operate; steadily keep your eye on the ultimate success of your cases—not upon the applause you may derive from the neatness or facility with which your operations are accomplished; and ever bear in mind, that upon the successful issue of your operations will your reputation depend.

LECTURE XLI.

Before I showed you the operation for stone in the last lecture, I was speaking of the difficulties which arise in the extraction of stones from various circumstances; as, for example, where the stone is excessively large, or where the perinæum is very deep. A deep perinæum is a great obstacle; the distance of the bladder from the external parts throws great difficulties in the way of the operation. The force which it is necessary to employ in such cases is often so great as to lead to the destruction of life. When a stone of considerable magnitude is accompanied with an enlargement of the prostate gland, the patient rarely recovers from the operation. A number of small calculi in such cases is of less importance, but a large stone, accompanied with an enlarged prostate, generally leads to a fatal result. Mr. Henry Earle has constructed an instrument, for the purpose of breaking large stones in the bladder by means of a perforating screw. I have not had an opportunity of making use of it; but it appears to me to be well constructed for that purpose, and very likely to succeed. It is undoubtedly a very desirable thing to break stones, in cases either of a deep perinæum, or an enlarged prostate, and the invention of such an instrument cannot but be advantageous to the profession. When I say that cases of large stone, accompanied with enlargement of the prostate gland, generally terminate unfavourably, I do not mean to be understood that the enlarged prostate necessarily leads to the destruction of life, but the patient very rarely recovers his health perfectly afterwards, so as to be free from

the symptoms of the disease. Patients under these circumstances generally suffer very much from the enlargement of the prostate after the stone is removed. I remember a curious case of a French gentleman who was operated upon for stone by Mr. Cline, senior. Mr. Cline happened to take out his watch, and to make some indifferent observation; the patient, however, thought he said that it was dinner-time. He recovered from the operation, but as he still suffered occasionally from symptoms of stone, instead of being grateful for having been relieved by the operation, he used constantly to say that Mr. Cline was in a hurry for his dinner, when he performed the operation, and had left a stone in his bladder. This gentleman died some time after, and left five guineas to myself or any other surgeon, except Mr. Cline, to examine his bladder after death, for the purpose of ascertaining whether a stone had not been left there. I happened to be out of town at the time, but Mr. Ramsden, who was then surgeon at St. Bartholomew's Hospital, on examining the body, found that the stone had been completely removed, but that the gorget on entering the bladder had nearly separated a small portion of the prostate gland, so that a little valve was formed on the inner side of the bladder, which fell occasionally over the beginning of the urethra, when the patient attempted to make water. When this happened, he was under the necessity of remitting the attempt to discharge his urine, and suffered great pain. I shall send round the preparation, in which you will see the portion of the prostate nearly separated by the gorget.

It not unfrequently happens that a cyst is formed in the bladder, in which the stone is either partially or entirely contained. If the cyst includes the stone entirely, the symptoms of stone cease. It happened very fortunately for the person who obtained the reward from parliament, for discovering a medicine, capable of dissolving stone in the bladder, that he gave his medicine to a person in whose bladder a cyst of this kind formed. It was fully established that a stone had been distinctly felt by some of the most eminent surgeons in the metropolis, before this person took the medicine; and after he had taken the medicine for some time, the stone could no longer be felt. On examination of the body after death, however, it appeared that the stone had escaped into a cyst, by which it was completely enclosed, so that it no longer produced any irritation in the bladder. There is a preparation on the table, which will illustrate the appearance of such a cyst, the mucous membrane passing between the muscular fibres, and forming a cavity through the coats of the bladder large enough to admit the stone. When the stone is partly in the cyst, and partly in the bladder, you may sometimes open the cyst, and remove the stone without opening the

bladder. An example of this occurred lately in a child at the other hospital, who had slight symptoms of stone. On sounding the child I felt a stone, but as it did not give the usual impression to the sound, I passed my finger into the rectum, and felt the stone confined in a bag above it. On raising the stone with my finger, it struck firmly against the sound. I did not open the bladder in this case, but passing my finger into the rectum, and carrying a knife through the perinæum above the rectum, I opened the cyst, and extracted the stone from it. The child did not pass its urine through the opening after the first day, and the wound healed very readily. I have seen Mr. Chandler extract a stone from a cyst in a child, by means of a probe-pointed bistoury; he dilated the mouth of the cyst, so as to be enabled afterwards to extract the stone. In general, cysts in the bladder containing stones are connected with an enlarged state of the prostate gland.

There is a preparation illustrating this state, which was taken from a patient who died from the operation in the other hospital. The repeated attempts which were made to extract the stone, which did not succeed till after a great length of time, produced great irritation, and ultimately ulceration of the bladder, which led to the destruction of life. A great number of small stones, to the amount of thirty, forty, or more, are sometimes found lodged in a cyst, situated behind the prostate gland. There is a practical point which ought not to escape my attention or yours; and that is, that the bladder sometimes undergoes a partial contraction, so that the stone is completely embraced by it.

Here is an example taken from a child, which died from this cause at the other hospital when I was an apprentice; there is another example of this partial contraction of the bladder in the collection. The way in which it happens is this: surgeons are generally anxious to allow the patient to retain a considerable quantity of urine in his bladder in order that the sudden gush of water, on the introduction of the gorget, may inform them that the instrument has reached the bladder. This practice is, however, wrong; because, when the patient is allowed to retain a considerable quantity of urine, the bladder suddenly contracts, when it is discharged, and so firmly embraces the stone, that when you introduce the forceps there is no space between the bladder and the stone, and the instrument constantly slips from the stone. In this way the patient is often exhausted by the repeated attempts at its extraction. I once saw a patient of Mr. Travers under these circumstances, though he afterwards recovered from the operation. I have no doubt he well remembers the case to which I allude; immediately after the gush of urine, the bladder contracted at its fundus, and the forceps slipped repeatedly from the stone, in the manner which I have described. Soft

stones require the use of the scoop; a number of calculi will require either the frequent introduction of the forceps, or the use of the scoop. I do not recollect that there is any other circumstance which I need mention to you respecting the lateral operation for stone.

After-Treatment.—With respect to the after-treatment, some surgeons inject the bladder, with a view of removing every remaining fragment of stone. This is not the practice in these hospitals, and I am by no means satisfied that it is of any use. It might have been necessary when dressings were applied to the wound, but this is never done now; the wound is left open, so that the urine may distil as freely as possible. In this way any remaining portion of calculous matter is carried away, and there is no danger of its accumulating in the bladder. The after-treatment consists in giving the patient opium as soon as the operation is over; indeed, in some cases where the patient is exceedingly irritable, I give opium two or three hours before the operation is performed. I do this with two views; first, because the opium deadens the sensations of the patient, and he suffers much less pain from the operation; and secondly, because it renders him much less irritable after the operation. The patient often falls into a composed and tranquil sleep in consequence of the opium, instead of rolling about the bed in an irritable state. The opium, therefore, acts beneficially, by diminishing immediate and remote irritability, and I have never found it produce any improper effect. It will be proper to give diluents very freely to the patient; a small quantity of soda or potass should be put in his diluted drink; gum may also be added, as it is believed to have the power of soothing the parts, and diminishing the irritating quality of the urine. Whether it have that effect or not is doubtful; but it is generally believed to have some influence in this way. The danger after the operation for stone is, that of peritoneal inflammation. On the day after the operation, therefore, you should put your hand on the lower part of the patient's abdomen, and inquire whether he feels any pain. If there is any tenderness of the peritoneum, you should apply leeches to the abdomen, and foment it; it will be often necessary to take away blood, and to put the patient in a warm bath, if the symptoms should be urgent; vomiting is a frequent symptom, when the abdomen of the patient is in a tense state. The subsequent treatment will consist in giving considerable doses of the submuriate of mercury. Calomel is a very useful medicine in this case, not only as a purgative, but because, combined with opium, it diminishes irritability, and lessens the disposition to inflammation in the abdomen. Purgatives and anodyne injections should also be administered. The time in which a patient recovers is generally from seventeen to twenty-one days, under

favourable circumstances. It is sometimes longer when the perinæum is deep; on the other hand, I have known a patient to be well in a fortnight after the operation. The urine frequently passes in the right course in about twenty-four hours after the operation; sometimes, however, not till after three or four days; this will depend, in a great measure, on the size of the stone. In general, the patient has a rigor, when the urine returns to its natural course; you need not, therefore, be alarmed at this symptom.

ON CALCULI IN THE URETHRA.

When a stone is lodged in the urethra, it is fouud in three situations; I will endeavour to explain to you the difference of treatment required. according to the situation in which the stone is found. When you find a stone in the urethra, it will be in vain to attempt to extract it with the forceps; even when it is felt very near the orifice of the urethra, or when you can see it by opening the orifice, you can very rarely succeed in extracting it with the forceps. There are three situations in which a stone is found lodged in the urethra; first, in the perinæum; secondly, opposite the scrotum; and, thirdly, opposite the frænum. When it is lodged in the perinæum, and the patient is labouring under retention of urine from that cause, be very much on your guard not to displace it from its situation, or thrust it back towards the bladder, as you will be in danger of subjecting the patient to the necessity of afterwards submitting to the operation for lithotomy. What you should do is to pass the largest sized bougie into the passage, so as to reach the anterior extremity of the stone; you should then tie the bougie to the penis, so that the urine may not escape by the side, and let it remain for a considerable time in the urethra. The patient will have an urgent desire to mak water, but you must desire him not to attempt to pass his urine until you give him permission to do so. When the urgency to make water is so extreme, that the patient can no longer endure it, untie the bougie from the penis; and as soon as it is withdrawn the urine accumulated behind the stone will gush forward, and the stone will generally pass into the vessel into which the patient discharges his urine. In this way you will generally succeed in getting rid of extraneous bodies from that part of the urethra. I have known a bougie remain four hours in the urethra, before the distress arising from the accumulation of urine was sufficient to justify the propriety of withdrawing it. The second situation in which stones are found in the urethra is opposite the scrotum. In this situation they sometimes prove fatal. There is a preparation on the table taken from a child, which died from this cause: the scrotum in this case was extremely

enlarged and reddened: the perineum was also inflamed, and gangrene took place, which led to the destruction of life. When the stone is lodged opposite the scrotum, there is danger of the urethra giving way, and the urine escaping into the cellular tissue. When you have ascertained by the probe that the stone is in this situation, you must endeavour to push it about an inch behind the scrotum, where you should make your incision. It is wrong to make the incision through the scrotum itself, if you can avoid it; but if you are obliged to do so, in consequence of your being unable to push back the stone, make the opening as large as possible, so that the water may pass with great freedom through the cellular tissue, and escape externally. The third situation in which stones are lodged in the urethra is opposite the frænum, where it will be necessary to adopt a different plan. I have told you that you can very rarely succeed in extracting them with the forceps; what you must do is to curve the end of a probe as much as possible; pass it down the urethra beyond the stone; and then withdrawing it, you will generally succeed in extracting the stone. The reason why you cannot extract it with the forceps is, that when you try to bring the forceps forward, you pull the urethra back on the stone, and consequently, you do not move the stone itself. I once had a pair of forceps constructed similar to those used in midwifery, of which the two blades were separately introduced into the urethra, and afterwards locked externally. The probe, however is most easily introduced: if there should be great resistance, you may enlarge the urethra a little with the knife at the frænum. A curious case occurred the other day, in which I extracted two calculi from a man's urethra. I did not know that I had such an operation to perform, and therefore I had no opportunity of giving you previous information of it. The man was suffering under retention of urine from stricture; I did not know that I was to meet with calculi, but the way in which I operated was this:—I passed a sound, or staff, into the urethra, down to the stricture, and instead of turning it towards the bladder, I turned the point of the instrument towards the perinæum, so that the urethra was quite prominent tomards me. I made a cut in the course of the urethra, a little below the instrument, and finding something very hard there, which I believed to be stone, I extended the cut and found a stone. I then divided the urethra to a considerable extent, and a stone larger than a three-ounce grape-shot passed through the opening. When I had removed this, a smaller stone made its appearance. This stone was lodged in a cup in the upper part of the larger stone. The appearance of the stones, which were completely locked and fitted to each other, was extremely beautiful. The next step was to put the patient in a situation to have

a catheter passed. I pushed the sound onward through the strictured part, and, having cut the part with a knife, I introduced my finger into the wound, and carried it into the bladder. A similar case occurred to me in a former period of my life; the form of the stone was exactly the same, and the treatment I pursued very much the same as I have just described.

OF STONES IN THE PROSTATE GLAND.

Stones in the prostate gland differ in composition from those in the bladder; they consist of phosphate of lime. There are two species of calculi in the prostate; those which pass from the bladder in consequence of ulceration, and those which are found in the cyst formed in the prostate gland itself. There is a preparation on the table, in which three calculi are seen lodged in the prostate, in consequence of ulceration opening from the bladder, and another in which there is a number of calculi contained in a cyst formed in the prostate. Calculi in the prostate gland may be readily detected by introducing your finger into the rectum. I was once sent for by a Mr. Vaux to a gentleman who was the subject of retention of urine. I introduced a catheter to what was supposed to have been a stricture, but I felt the instrument pass over a calculus; I put my finger into the rectum, to ascertain where the stone was, and pressing upon the prostate gland, I felt the stone just above it. It afterwards appeared that there were three calculi in his prostate gland. I told him he might be immediately relieved by suffering me to make an incision in perinæo; but he was a timid man, and would not consent to the operation. He lived for some years after, was occasionally the subject of retention of urine, and died miserably from the effects of the disease on his kidney. He foolishly chose to die a painful death, when he might have been easily relieved by a slight operation.

I recently had a elderly gentleman under my care who had an enormous number of calculi in his prostate gland. I do not know how many I removed from him, and if I did, I should scarcely venture to say how many. A bottle full of calculi taken from this gentleman has been preserved. They were not, of course, of a large size. I did not open the bladder in this case, but, having introduced a staff into the bladder, I made an incision in the perinæum towards the prostate gland, and, putting my finger into one lobe of it, I found a quarry of calculi. I removed some of them with my finger, and some with a small pair of dressing forceps. I then opened the other lobe, and extracted a number of stones which were imbedded in it. I have since had occasion to see this gentleman, and again removed a number of calculi from the prostate gland. It may be said that there is a little difficulty in the operation of opening the prostate gland, but a man who is acquainted with

the anatomy of the parts, and who has studied his profession, will never talk of difficulty; and if he is not well acquainted with the anatomy of the parts, he ought not to touch the human body as a surgeon. I have heard it observed that to make an opening into the urethra is a difficult operation—Ridiculous! A man who has studied his profession, and dissected the human body, ought to be flogged if he cannot open the urethra with the greatest ease. I shall now proceed to the

OPERATION FOR STONE IN THE FEMALE.

And I here am a little afraid of my friend, for I shall have occasion to mention some odd stories. (A laugh). Calculi form as readily in the female as in the male; but the female is much less frequently the subject of the operation of lithotomy, in consequence of the shortness of the meatus urinarius, and the ease with which stones pass away from it. I think the symptoms of stone in the female are more urgent than those in the male. It is horrible to witness the suffering which a woman experiences in consequence of this disease. She has a dreadful pain at the extremity of the meatus urinarius, and in addition to this there is a forcing down of all the lower parts of the pelvis, as if they were about to protrude; a frequent disposition to make water, and all the pains suffered during delivery. There is generally a prolapsus uteri, and a discharge of bloody urine. In addition to these symptoms, there is almost constantly an incontinence of urine; a great urgency to discharge it, and an incapacity to retain it. The constant excoriation of the parts from this cause keeps the patient in a most offensive state. There is some variety as to the situation in which stones are found in the female: they are sometimes lodged in the urethra and vagina. A curious instance of this kind happened to my old friend, Mr. Cline, who took me, when I was an apprentice, to the first operation for stone in the female, which I witnessed. In this case he felt a stone just at the beginning of the meatus urinarius, at the neck of the bladder, and, on passing his finger into the vagina, he found a portion of stone in that situation. He removed the portion of stone from the vagina, and then dilating the meatus urinarius with the gorget, he extracted the other portion of stone. The two portions formed a sort of chain-shot, a bar between the urethra and vagina communicating between them. You must be upon your guard, however, gentlemen, against imposition in the female; for extraneous bodies often find their way into the meatus urinarius of the female in a very extraordinary manner. Stones of very considerable size will pass by the meatus urinarius in the female, without the necessity of performing an operation. Here is a specimen of a large stone which passed from a patient of Mr. Giraud, a surgeon of

great respectability. The patient had suffered for a length of time from this stone, when one night, on getting out of bed and discharging her urine, she heard something fall into the vessel, and on a light being brought, this stone was found to have passed. Mr. Headington had a patient from whom a much larger stone had passed in the same way. Stones may be removed from the female either by dilating the meatus urinarius or by lithotomy. The extraction by dilatation is, however, greatly to be preferred, not only because there is much less danger in it, but because it does not leave behind the melancholy consequences of lithotomy in the female, I mean, the loss of the retention of urine. A woman who undergoes the operation of stone generally loses, for ever after, the power of retaining her urine. Her condition, therefore, is most deplorable; the constant discharge of urine, and the constant excoriation of the parts, render her offensive to all around her; her health is broken, and she is completely cut off from all society.

The learned professor proceeded to perform on the dead subject the operation of dilating the meatus urinarius, and extracting the stone from the bladder of the female. The forceps employed for this purpose was an instrument constructed upon his own suggestion by Mr. Weiss—a gentleman, observed the learned professor, whose ingenuity enables him to avail himself of the slightest hint, and to produce mechanical contrivances admirably adapted for the purposes for which they may be suggested.

LECTURE XLII.

The subject with which I propose to occupy your attention this evening is the diseases of the breast; but before I proceed to them I have a few words to say to you on calculi in the submaxillary duct.

CALCULI IN THE SUBMAXILLARY DUCT.

Stones are occasionally found in the duct of the submaxillary gland, and produce irritation, the cause of which is unintelligible to the patient, and often not distinguished by the surgeon. The unpleasant feelings produced by stones in this part occur at and after meals; the stones arrest the progress of the saliva, and produce irritation of the surrounding muscles; a swelling forms at the orifice of the duct; day after day the swelling returns, and at last the patient puts his finger along the side of the tongue, feels something hard there, and by this means it is discovered that there is a stone in the submaxillary duct, which has produced the accumulation of saliva, and given rise to the irritation experienced by the patient. Sometimes a small channel is formed through

the stone, which allows of the escape of the saliva; but in all cases the degree of irritation depends on the retention of the saliva. A gentleman with whom I formerly lived had a stone in his submaxillary duct, and he used to say to me that he had a curious sensation in his mylohyoideus muscle, a spasm of that muscle; this continued for weeks and months; but one day he sent for me, and said that he had discovered the cause of the irritation that he had so long felt in the mylohyoideus muscle; that it was a stone formed in the submaxillary duct: he requested me to take it out for him, which I did. With respect to the operation required for the removal of stones from this part,—you must place your finger under the jaw, and press against the gland; an assistant holds the cheek on one side, so as to bring it as far as possible to the ear; you then perceive the duct under the tongue; you raise the duct and tongue, and feel for the stone; and, having discovered it, you elevate the cyst, and with a cataract knife cut on the stone, and then with the end of a hook you pull it out; it is very easily removed, and there is no danger of wounding any vessels, supposing you press the duct towards the mouth; if you omit this, you may wound some artery, and have troublesome hemorrhage; raise, then, the duct as much as you possibly can in performing this operation.

We now come to the diseases of the breast.

You find the breast subject to cancerous affections, and others of a different character; some that are not dangerous to life, though they require an operation for their cure—others that are not dangerous, and do not require an operation—and you find it also subject to some disease which, with an operation or any other means that you may try, generally terminate unsuccessfully. We shall first speak of the

HYDATID, OR ENCYSTED SWELLING OF THE BREAST.

The breast is liable to the formation of a swelling, which is at first hard, and afterwards passes into the fluid state, called the hydatid, or encysted swelling of the breast; it consists of numerous cysts containing water, as in hydatids or cysts that are found in any other part of the body. There are but two species of this complaint—the one which contains a fluid, like serum in cells—the other a globular hydatid, such as is found in the liver and other parts of the body; in the breast this kind of hydatid is occasionally found. The hydatid swelling at the beginning is of solid feel, and I know of no mark which distinguishes it in his state from that of chronic inflammation of the breast, or such as is produced by the retention of milk. Now and then, although it is exceedingly rare, I have seen at the commencement a number of little swellings, esembling peas in size, and containing water; however, in

general, there is no diagnostic mark at the onset, between this affection and the state produced by common inflammation of the breast. There is no pain in the part, except just prior to menstruation, when it becomes painful; at other times pain is absent. After the swelling has continued some little time, without any feeling of fluctuation in it, it may be divided into a solid and fluid part, and on putting the hand on it you are able to say, "Here it is solid, there fluid," but all this time it is wholly unattended with pain. Another circumstance deserving attention is, that the skin is quite free from discoloration, excepting a little prior to ulceration, when the part about to ulcerate changes colour. The complaint is entirely unaccompanied with constitutional derangement. At the time when ulceration commences, the constitution will be affected by irritable fever, the same as is always met with when the process of restoration is set up in any other part of the body. But the disease does not affect the constitution in any serious degree. This swelling is first hard—in the second place, fluid,—thirdly, unattended with pain—and fourthly, there is no particular constitutional irritation, excepting when ulceration commences, and then it is slight, and not at all alarming to the patient's mind. This disease never requires removal on account of any thing malignant in its character, but it is generally done at the solicitation of the patient, in consequence of the inconvenience she experiences from the size and bulk of the breast.

When it has acquired any considerable magnitude, a slight inflammation begins in one part, and then this ulcerates, which allows of the discharge of a serous fluid. This being discharged and the cyst empty, suppuration, with partial adhesive inflammation, is set up, and the cyst becomes obliterated: another undergoes the same process, and so on, one after another. A sinus seems to form, which leads from that in a state of suppuration to another cyst, and thus it undergoes the same change as the one with which it communicates; in other parts the cysts do not break in this way, as in the ovarium; one cyst bursts, another remains unopened; they are distinct—so in the breast, they are divided into different bags; but one or two ulcerate and suppurate, which communicate with the rest, and then the breast gradually wastes. I have never seen an instance of this affection cured by natural means; it remains for months and years, the cyst sometimes breaking one after another, and thus the breast wasting, till little of it remains. It occurs at almost any period after puberty under twenty and after fifty; between fifty and sixty, and I have seen one case of it in a person above sixty. In persons under twenty I have met with several instances, and you more frequently see it in the young than in advanced age; from fifteen to twenty-five more so than after that age.

It sometimes acquires a most extraordinary magnitude. I operated once on a lady from Northamptonshire for this complaint, and the breast weighed, I think, fourteen pounds. I am not quite sure as to the exact weight, but I know it was of an immense size. I operated lately on a lady not very far from my own house; the removed breast weighed thirteen pounds, and consisted of an immense number of cysts. I was to have operated on a patient this very day for this complaint, but not having time I was obliged to postpone the operation; probably I shall do it to-morrow; I will bring the removed part down with me, in order that you may be masters of the appearances which are produced in the breast, under this state. A great many mistake this complaint for the malignant cyst; but he is extremely ignorant, gentlemen, who can mistake the one for the other; for the two diseases are very different in their character. Of the causes of this complaint we know nothing, nor of the production of the cysts; these are points involved in obscurity. On dissection, the following are the appearances of a true hydatid breast:— It contains a globular hydatid, the same as is met with in other parts of the body; this produces a cyst, which becomes the parent of others, and when you open it, you see little ones growing from the internal membrane of the cyst. Many of you recollect that I opened an hydatid cyst in the thigh of a man at the other hospital a few months ago, and that a great number of small hydatid cysts were drawn off; I ordered some of them to be preserved; the internal lining of the first cyst is like an uterus to the others; these grow from it in spots here and there, and at last become parricides, for they destroy the parent; thus it is in the breast, exactly the same as in the liver.

When the swelling has acquired a considerable magnitude the operation is generally performed for its removal; the patient is anxious that it should be performed; if she asks, is there any danger if left alone, you can assure her that there is none; yet as long as she feels the swelling, she is incapable of enjoying life—gives way to desponding feelings of every kind; insists on the operation being performed, and thus is the surgeon obliged to do it on account of the patient's solicitations. I tell you, assure her there is no danger to life, and still she persists in having it done. The operation is neither dangerous at the time, nor in the future, to the patient's life. The largest breast with this affection that I ever removed, was done without the constitution suffering in the least degree. The patient's life is not in danger from it, and as for the disease, you never find it return in any other part of the body. If any diseased part should be left on the gland, there will be a chance of the return of the disease. If so, other hydatids form in the same breast, but not in the other; therefore, the best plan is to take away the gland.

dular structure of the breast, and all the diseased part being removed, the complaint will not return. Although the removal of the breast is the plan usually adopted, yet I will tell you a mode of treatment which I have employed with success when there has been a single cyst. I will give you two examples, which will illustrate the nature of it better than any thing else. I do not know that it has been described by authors, but I will not speak positively of this, for God forbid that I should be obliged to read one-half or one-fourth of what is published now a-day.

CASE I.—A young woman was sent by a respectable medical practitioner to Guy's Hospital, with a swelling of the breast, and for the purpose of knowing whether an operation was necessary for its cure. She was nineteen years of age, and when I examined the swelling it was moveable, and I was almost inclined to suppose that it was scirrhous; but her constitution was sound, her general health exceedingly good, and I said no operation ought to be performed. I kept her in the hospital some weeks to see the progress of the complaint; but the girl being tired of waiting any longer, left the hospital. I lost sight of her for three years, at the expiration of which time she came back to Guy's with a considerable swelling of the breast, which on examination I found to be partly solid, and partly fluid. The gentlemen assembled in the theatre to see the operation; I ordered this patient into the room, and said that I should not remove the breast, but simply introduce a lancet into it, and open the swelling. Having done this, water, paler and less coloured than serum, escaped in abundance through the opening. I said, "All that it will be necessary to do here, will be to produce the adhesive or suppurative inflammation. Do not close the opening till the adhesive process has commenced, and glued the sides of the cyst." This was done, the sides of the cyst were glued together, the opening was closed, and the patient was discharged quite cured.

CASE II.—During the last summer a lady came to me with a swelling of the breast, not very large, but hard. At first I was led to think it scirrhous, but did not decide on its character; and on looking at the constitution of the patient, I was pretty well assured that it was not scirrhous, nor of a malignant kind. I said that I would watch it; and told the patient that all it was necessary to do would be to attend to the state of her bowels. She came to me from time to time, and I perceived that in the centre some fluid was forming. After some time the fluid accumulated, and one day I put a lancet into the swelling, and discharged a quantity of serum. I put some lint into the wound so as to form a tent to preserve the opening: in a short time granulations arose from the bottom of the cyst, and the lady became perfectly cured, no disease having returned in the breast. It will be proper to put you on

your guard against malignant diseases of the breast, which are not so numerous as is thought. A great number of the affections of the breast are capable of cure; and it requires attentive observation to distinguish one from the other; therefore when you see diseases of the breast, do not be in too great haste to put them under any classification, for if you do, you will frequently be liable to error.

We now come to the *scirrhous tumour* of the breast. There are but two malignant diseases of the breast; this is one of them, and the other is the fungous tumour. The scirrhous tumour is the one which I shall describe in this evening's lecture, of the other I shall speak at a future time.

OF THE SCIRRHOUS BREAST.

This is an extremely frequent disease, and its symptoms are as follow: The first symptom of scirrhous breast is the discovery (as the patient says, by accident) of a hard and moveable swelling; now and then a little blood is discharged from the nipple, which stains the shift; this is produced by the inflammation extending along one of the lactiferous tubes, and thus blood is discharged. The swelling is attended with little pain. At first it is moveable, free from pain, and circumscribed. In this last respect there are varieties; it sometimes happens that the inflammation extends, and the disease is lost in the surrounding parts, yet it generally happens that you can mark out the exact situation of the tumour. In this case it continues a long time, for weeks and months gradually increasing, and at last the second set of symptoms come on. A violent darting pain is felt in the breast; the patient says it is like a knife or lancet being pushed into it; there is also a burning sensation in the part, and the patient feels worse a little before menstruation—about four days before that period; indeed if you trace the disease, you will see that for the first fortnight after the periodical discharge the symptoms are less severe, but that for the last fortnight. and a little before the show of the menses, the pain is excessive; it is not a continued pain, but comes at times, and is so severe as to make the patient start from the chair. I should say that the increase of the size of the breast is not equal, and that it does not follow any regular progression; it increases by starts; prior to menstruation it gains in size; after the menses have appeared, it again loses. The next circumstance is, that the glands in the axilla begin to enlarge, or those between the axilla and breast. The skin around the nipple has a puckered appearance; it is drawn in at the centre, and is elevated on the sides. This gives the part an appearance resembling that produced by ulceration and cicatrization; the skin is drawn in, and thus it pre-

sents the appearance of cicatrization without the reality. In the progress of the complaint a number of small black spots will be seen on the breast, and these increase as the breast enlarges. In the second stage, inflammation on the skin and nipple comes on, and the cellular membrane partakes of the character of the disease. I have seen scirrhous of the skin as well marked as that of any other part. The third set of symptoms arises from suppuration going on in the part, for the breast undergoes the same process as any other part affected with cancerous disease. It is not true that pus is in general secreted, but after the adhesive process has been set up, there is an attempt at the formation of pus, which if it forms, is not general, being only in some parts, and not in the others; and it is more properly a sanious serum, as it has not the common character of pus. This arises from the attempt at its formation being imperfect; and if you open the swelling, a quantity of bloody serum will be discharged. Prior to an opening being formed, the skin becomes livid, and the breast is very painful in that part where it opens. In general, the opening is not made by art, as the object is to prevent ulceration as long as you can; but when the ulcerative state has begun the glands above the clavicle enlarge, the arm swells first just above the elbow, then it extends over the hand and fore-arm, and upper arm. There is an interruption to the functions of the absorbent system; the blood is not returned by the veins; an increased secretion takes place from the termination of the arteries; fluid is thrown out into the cellular tissue, which, when evacuated, coagulates. The constitution is severely affected, there is a difficulty of breathing; an inability to lie but on one side, pain in the right side, and also in the loins: and the patient says that she has rheumatic feelings all over the bones. The stomach is deranged; the patient has severe spasms at the scrobiculus cordis and frequent vomitings; at last she becomes worn out from irritation, and expires.

What do you find on dissection? Is the disease confined to the particular part, the breast, or are its effects general?—Gentlemen, I will tell you what you find on examination after death:—The breast is one solid mass, like cartilage, with very little of vascularity, except its edges; internally fibrous, but the vessels are few, and pass over its surface. When the breast has acquired any magnitude, there is generally an opening in it; and then, internally, it has the appearance of being worm-eaten, and is spongy: at the part where there is ulceration, it is very vascular, and with the ulceration you will find a bloody serum. The absorbent glands put on the same character as the scirrhous breast; but besides this, the scirrhus extends to the cellular membrane, the skin and the muscles; the skin is scirrhous, the cellular membrane

partakes of the inflammation, and also becomes scirrhous, and the pectoral muscles are full of scirrhous tubercles, which are white and solid; and thus a great part of its fibres are generally diseased. The glands in the axilla are of a scirrhous nature; in the beginning they are solid and continue so until ulceration commences; they then become spongy, and contain a sanious serum. The glands above the clavicle are in the same state, and by pressure on the thoracic duct they cause an interruption to the process of absorption; chyle is prevented from being transmitted into the blood, and thus it is that the appetite is sometimes voracious, whilst the patient is rapidly wasting. But for the chest:—You find hydrothorax on the side affected, and the absorbent vessels on the pleura, corresponding to the scirrhous breast, are in a diseased state, and small white spots, like pins' heads, will also be seen. I ought to mention, that you should never operate in this complaint when dyspnœa is present; for I have known patients who have come to our hospital, and have been operated on for this disease when they have had this symptom, and who have died in two or three days after the operation; on examination, water has been found in the chest, and tubercles on the pleura. Now and then you find on the pleura covering the lungs tubercles on the surface opposite to the diseased breast, and having the true scirrhous character. But the liver is most frequently diseased: on the right lobe there are in general tubercles; the glands of the axilla being affected, the internal thoracic absorbents carry the diseased matter to the liver, which becomes tuberculated, and assumes the true scirrhous character. You rarely find the uterus free from disease; it is affected with what are called polypi, but they are rarely scirrhi of that organ; hence the pain in the loins, the result of the connexion between the nerves of the uterus and those of the loins. This is not all the history of what is met in this complaint, deplorable as it is. I was asked to see a lady who had fractured her thigh-bone; I asked her how the accident happened?—she stated, by simply turning her thigh over the edge of the bed. When I was examining it, I saw that the left breast was in a state of scirrhous ulceration; I said "How long have you had this?"--she replied, "For a great number of years." The thigh united; but with so little firmness, that in going into bed one day she broke it again. I attended another lady, who broke her thigh below the trochanter major, by very little force; and a gentleman, who was formerly my assistant, was called to a lady who broke her thigh by walking across the room—each with a scirrhous affection of the breast. I was sent for to Sussex once, to see a lady who fractured her thigh by merely turning in bed, and who had at the same time a scirrhous affection of the breast; and what you find on examination of the bones

of those affected with scirrhous tumours, is absorption, not only of the cancellated structure, but also of the shell of the bone. I attended a lady, with Mr. Young, a surgeon of the city (whose ill health the profession has deeply to deplore), who had a scirrhous affection of the breast, accompanied with agonizing pains of the back; the disease proceeded, and the patient was at last worn out by irritation. Both Mr. Young and myself were extremely anxious to ascertain the cause of the pain of the back, and on examination of the vertebræ, we found several affected with scirrhous tubercles, and in a state so as to surprise any one. The bone had been absorbed as far as the scirrhous had formed, which was as distinct as scirrhus of the breast. I operated on a patient at the other hospital for a scirrhous breast; the disease returned, and she came back to the hospital to end her days; she also had a disease of the spine, from which she had suffered more than from that of the breast. On examination after death tubercles were found adhering to her spine; thus much for the appearances found on dissection. I shall conclude by observing, that what I have to say to you on the diseases of the breast and testis I wish particularly to impress on your minds; and I hope that I am not too arrogant in saying that the knowledge I possess of these diseases is to a considerable degree my own—that it is the result of an extensive observation on both the dead and the living, and that knowleoge to the best of my ability, shall be communicated to you.

LECTURE XLIII.

I WAS speaking, at the conclusion of the last lecture, of the dissections of the scirrhous tubercle, and I promised to bring some preparations shewing the effects of this disease on different parts of the body. Here is a part of the thigh-bone, taken from the breast of the patient who broke her thigh on rising in bed. On examination, there were found scirrhous tubercles in the thigh-bone, which you have now an opportunity of seeing. Here is a specimen taken from the lady of Sussex, who had disease of the breast, and fractured her thigh turning herself in bed; she had excruciating pain in the thigh after the accident, but she lived a long time afterwards. On examining the part after death, we found it affected with scirrhous tubercles, which had commenced in the cancelli of the bone, and lastly the shell had given way. You will see the scirrhous tubercle exterior to the bone. I had a specimen sent me by a practitioner in the country, of the os humeri, which had undergone a similar change. In opening the body of one of the ladies whose case

I have mentioned to you, I found the sternum affected with scirrhous tubercle. I stated to you the case that I attended with a respectable surgeon of the city, where the vertebræ were affected; and here is a specimen taken from the patient at Guy's, who had distorted spine, and a return of a scirrhous tumour in the breast, after an operation had been performed. There is a deposit of scirrhous matter on the vertebræ. These different preparations shew that the formation of scirrhous matter is not confined to the breast, and that it is only the index of a disordered constitution. (The learned professor sent round the theatre the different specimens just alluded to, illustrative of the cases which were mentioned at the end of the last lecture, in order that each student might have an opportunity of examining them for himself.) I shall now continue the subject of diseases of the breast, and shall state to you some further particulars respecting the scirrhous breast.

SCIRRHOUS BREAST.

Married women who bear no children, and single women, are more subject to this complaint than those who have large families. It is very probable that the natural change which the breast undergoes in the secretion of milk has some power in preventing this diseased affection of the breast, which is certainly less frequently met with in married persons who bear children, than in married persons who do not, and those who remain in a state of celibacy; but it is no security against this complaint that a woman has borne children. I knew a woman with this disease who had been pregnant seventeen times; she had borne nine children, and had eight miscarriages, so that in the whole she had been pregnant seventeen times: yet the disease in this person was as large a scirrhus as I ever witnessed. Although the disease comes on more frequently in those who have had no children, in consequence of the breasts not having undergone the natural change in the secretion of the milk, yet this is no security against the complaint, though it lessens the tendency to it. It is generally believed that scirrhous tubercle of the breast is connected with the cessation of the menses. I believe that if a person has a tumour in the breast which is not malignant, and that it remains so till the change of life takes place, that then an undue action may be excited in the part, and the tumour becomes scirrhous just at the cessation of the menstrual discharge. But the disease generally occurs at an earlier period: the period at which scirrhous tubercle is usually formed is from thirty-five to fifty years of age; more frequently under forty than above it, though I have met with a great number of cases from forty-four to forty-five years of age; however, it is more frequently found under forty than above it. It is

not a disease of young persons; it is rarely seen between twenty and thirty. The youngest person that I ever saw with this disease was twenty-seven years old; I have seen another case in a person of twenty-nine; but excepting these two cases, I have never met with it under thirty. I know that there are many tumours met with at an early age, which are called scirrhous tumours, but they are not so, gentlemen; and the medical man who asserts that they are is deceived as to their nature, for the tumours found at this age are quite of a different character from scirrhous tumours. The disease, then, called scirrhous tubercle is found from thirty to fifty years of age; under thirty rarely, for I have only met with two cases below thirty in the course of a life which has been favoured with considerable opportunities of watching this disease. As to the most advanced age at which I have seen this complaint, it is at eighty-six. A lady, eighty-six years of age, came to me with a scirrhous tubercle of the breast. When she called, she asked, "Should it be removed?"—I said, "No, keep it; it will not shorten your life, for this disease is slow in its progress, when occurring in advanced age." She probably lived as long with it as if it had been removed; the breast never ulcerated, she had no pain in it, and the patient died of other complaints. However, I removed a scirrhous breast from a lady who was seventy-three years of age. It had begun to ulcerate, and the patient was anxious to have it done. Her state was unpleasant to herself, and the smell from the part offensive to those around her; and on these accounts she was anxious to have an operation performed. It was at her own earnest solicitation, and not at my suggestion, that it was done. The disease did not return, and the patient did very well. You see, then, gentlemen, that there is no period, however advanced, at which scirrhous tubercle of the breast does not occur; but it is not to be met with in the young.

The progress of this complaint is in some persons extremely slow. In general, however, it destroys in about four years from the commencement. It is from two to three years in its growth, and from a year and a half to two years in destroying life, after it has arrived at its acmé. When suppuration and ulceration have commenced, and the constitution is disordered, it is even then some time before the patient is worn out. Four or five years often elapse before life is destroyed. I have known some curious examples, in which the progress of the disease to the destruction of life has been exceedingly slow. I mentioned to you on a former evening that, in the lady who broke her thigh by turning in bed, I discovered accidentally at the time that she had an ulcerated scirrhus of the breast. On feeling the surrounding part, I found a number of scirrhous tubercles, and I said,

"Madam, how long have you had this disease?" "Twenty-two years, Sir," she replied. There was a patient in the other hospital once, who had an ulcerated scirrhus of the breast, and it had remained in that state for seventeen years. I am anxious when a patient comes to me with this horrible complaint, in such a state as to afford her no hope from operation, to mention these examples. I am anxious to say to her, "Though your complaint has arrived at that stage in which an operation will be of no avail, and though it is of that nature which does not allow of cure by medical means, yet I can tell you of many instances in which it has been exceedingly slow in its progress, and if you have your life prolonged ten or seventeen years you will be perhaps content." This excites a beam of sunshine in the breast, and a gleam of joy on the countenance; "Death," she then says, "is not so near as I expected," and her anxiety of mind is removed by the hope which she has of the fatal event being procrastinated. It is right, gentlemen, in humanity, to mention these cases to patients labouring under this most distressing disease.

It sometimes happens that two or three in the same family are affected with scirrhous tubercle. I have known it occur in three sisters, who were related to a medical man. The first would not undergo an operation, and she died of the disease. The second did undergo the operation of having the scirrhous tubercle removed from the breast, but she died of a return of the disease. The third sister is still alive, and the disease in her has not yet proceeded to a fatal termination. It sometimes happens that members of the same family will be attacked with this complaint, but this is not invariably the case; but I do state that it is right when you observe the disease in one sister, to direct your attention immediately to prevent, as far as you can, its affecting the others.

Now, gentlemen, as to the causes of this disease; it is very frequently attributed to accident, but this is rarely a cause; now and then it is the result of a blow, or pressure on the part, or injury to it in some shape or other, but this is not often the case. Although the disease operates on some particular part of the body, yet it is always preceded by a state of constitution which has excited it. He who looks at this disease in the light of a local affection only, takes a narrow view of it. A blow or a bruise inflicted on a healthy person would be followed by common inflammation only, which would lead to the removal of the matter effused. But if a blow were received on the breast when the constitution was in a state disposed to the formation of scirrhous tubercle, it would be the cause of a particular action being excited in the part injured, and might lay the foundation of this complaint: therefore you see that no blow, no pressure on the part, nor any accidental circumstance

whatever will produce scirrhus if the constitution be sound. There must be some predisposing cause in the constitution, else it will not occur. Yet the formation of scirrhous tubercle does not entirely depend on constitutional derangement; there must be also a peculiar action excited in the part, and if there be no specific action, not any of the scirrhous kind, you will have no appearances of the disease. To show you that it is dependent on these two states, constitutional derangement and an altered action in the part, I will mention to you, that if you cut into a scirrhous tubercle, it will ulcerate, and all the horrors of cancer will very soon be the result of the injury; but suppose you cut round the tumour, in the healthy parts, where the disease has not shown itself, the wound heals, and no ulceration of the part follows; and again, after the removal of a scirrhous breast, the wound usually heals very kindly. If there is a disposition in the constitution to the production of the disease in any part, some circumstance exciting a peculiar action in it must occur, and then scirrhous inflammation is produced. The disease is made up of a derangement in the constitution, and of a local peculiar action; it is the effect of a specific action in the part, preceded by a disposition in the constitution to its production. The scirrhous tubercle is said to be fibrous; here let me observe that the fibres do not belong to it. They are nothing more than the cellular tissue thickened; if you were to macerate a scirrhous tumour, you might pick out from the cellular tissue the scirrhous substance, and it would then have the appearance of a honeycomb, from the circumstances of the cancerous matter being removed. This is deposited between the cellular tissue, in the same manner as the substance of the testicle is between septa.

TREATMENT OF SCIRRHOUS TUBERCLE.

I now come to the treatment of scirrhous tubercle; and first let me observe, that we possess no medicine which has any power over the disease—none which has any specific influence on it; and those who say that they have in their possession a medicine which is a specific in this complaint are empirics, and men entirely lost to all sense of shame, honour, and honesty. Our profession boasts of no such remedy, and the medical man has still to seek it. We have no medicine that will cure this disease: and it is our duty, as professional men, to say so, in order to prevent the baneful influence of those quacks who are a disgrace to the age in which they live, and who are constantly advertising *nostrums* for the cure of cancer. Honestly, then, let me state to you the fact—we have no medicine that can cure this disease; but I will tell you all that can be done by the administration of internal remedies in it. If a patient applies to you with scirrhous tubercle, and her general health

is in a disordered state, you may retard the progress of the disease by giving alterative medicines, and thus prolong her days. You should never perform an operation for the removal of a breast, unless the patient has undergone a course of medicine. Another view with which medicine is to be given is this: if an operation has been performed, you should alter the state of the constitution by the exhibition of alterative medicines, such as Plummer's pill, and the compound decoction of sarsaparilla; or, what I prefer, infusion of gentian, with soda and rhubarb; by these means you will improve the constitution, and lessen the chances of the disease returning. You may alter the constitution, but I defy any man to disperse scirrhous tubercle when it has formed. No man of common honesty will pretend to do it. Thus, all we can do by medicine is to change the state of the constitution prior to an operation, so as to prepare the patient for it; and when an operation has been performed, we can give alteratives so as to lessen the chance of its returning. But medicine will not have any effect on scirrhous tubercle when it is formed; not one tittle. You may take away the surrounding inflammation by local means, but you can remove no part whatever of the scirrhous inflammation. I should have observed just now, when speaking of the causes of this complaint, that one of the most frequent is grief, or anxiety of mind. It arrests the progress of the secretions, produces irritative fever, and becomes the forerunner of scirrhous tubercle. How often have I seen, when a mother or a nurse has been watching, night after night, with anxious solicitude, the pangs and sufferings of a child, and she had the comfort and gratification of seeing its recovery, that in a short time after this she has come to me with an uneasiness of the breast, which, on examination, I discovered to be scirrhous tubercle. Full three-fourths of these cases arise from grief and anxiety of mind. It is the state of mind and body which predisposes to this disease. The mind acts on the body; the secretions are arrested, and the result is, the formation of scirrhus. Look, then, in this complaint, not only at altering the state of constitution, but relieve the mind, and remove the anxiety, if possible, under which the patient labours.

As to local treatment, we possess no specific local applications. They can do nothing more than retard, in some slight degree, the progress of the disease. It is sometimes accompanied by common inflammation, and evaporating lotions are occasionally used. I do not think you would act wisely in employing them; they seem rather to do harm than good. Warm applications are also improper, if they be of considerable heat. Under warm applications the disease grows, for they increase the determination of blood to the part. If poultices are used, they should not

be above the natural heat; but patients generally complain of them as being uncomfortable. It is better to employ the soap cerate. If there be much pain with the disease, I order a drachm of extract of belladonna to be rubbed down with an ounce of the soap cerate; this diminishes the nervous irritability of the part, and the advantage of the soap cerate is, that it excites a gentle perspiration without any undue heat; it is the most useful application that I know of. If there be much inflammation you can apply leeches, though the mode of treatment which I like, is to alter the constitution, and the best for this purpose is the exhibition of five grains of Plummer's pill (the pilula hydrargyri submuriatis composita of the pharmacopœia) at bed-time, and on the following day

℞. Infus. gentian. ℥iss.
Sodæ carb. ʒss.
Tinct. columb. ʒi.
Ammon. carbon. gr. v.

It is necessary, in this disease, for which no specific is known, to give those medicines which restore the constitution generally. You will restore the different secretions by Plummer's pill, and diminish the irritability of the nervous system by the carbonate of ammonia; this is the best plan, as far as I know, to keep the patient alive as long as you can. Some say you should pay attention to diet; so you should, but if you give a patient a vegetable diet, allow her nothing but water to drink, and keep her low, it will be the worst plan you can pursue; if her strength is affected, you will by this means lower it still more, and soon bring her to the grave. I tell you what every man who has observed for himself knows to be true—I mean those, at least, who have not spent their lives in the closet, but in watching disease. If a patient consults me how she is to live, I say to her, take those things which you find agree with your own feelings best, and which do not derange the general health. If she asks, "Should I take any wine?" I say "No"—"Or any spirits?" "Certainly not," (God forbid that women ever should;) "never hurry the circulation, nor take any thing so as to disorder the constitution, but support the strength by animal food. If you should ever take any wine, mix it with water." The patient sometimes says, she has been told to "live on vegetable food only:" my reply is, that "I should like to know why you have been told so; for the man who has done it knows nothing of the nature of the complaint." I assure you, gentlemen, that if you weaken the strength by low diet, you will immediately quicken the pulse: you will perceive it in a person with the pulse at 80 increase in a short time to 110 and 120, and become small. Rest assured that, in proportion as you weaken the constitution, you

quicken the pulse. Do not debilitate it then on the one hand, nor stimulate it on the other; for if you do, it will be the sure way to hasten the progress of the disease. It was only yesterday that I met in consultation three medical men (one of whom was Dr. Farre), on a person affected with scirrhus. Dr. Farre has studied his profession as a professional man ought—has dissected for himself, and by this means has become intimately acquainted with the structure of the human body. He has watched disease with care in every stage, and, when opportunities have occurred, has pursued morbid anatomy with a zeal not often equalled; acquiring a knowledge of the changes produced by disease on the different parts of the human frame. This is the way to study medicine: but as to the physician who attends merely to his pharmacopœia and prescriptions, which any tyro in the profession can do as well, he neglects the true means of acquiring professional knowledge. One point of discussion at this consultation was, how the patient should live. I waited, as I wished to hear what the others had to say. "Shall she live low?" was asked. "Certainly not," said Dr. Farre. I then said, "I am very glad, sir, to hear that opinion come from you." The conversation on the subject then began (Mr. Travers also was one of the gentlemen present), and we all uniformly agreed that what we had observed in every case of cancer or malignant tumour was, that in proportion as the patient is kept low, you precipitate her course to the grave; this is uniformly so, and I particularly dwell on it, in order to prevent your minds being poisoned by false doctrines. Many, I have no doubt, believe an opposite mode of living to be the best, and conceive that they have seen it do good. They have tried it, and have thought the patient benefited, without taking into the account every concomitant circumstance which has had an influence on the amelioration of the patient's condition. The way to learn the effects of remedies and different modes of living is to try them without having entertained any preconceived opinion as to their efficacy. If a remedy is tried under the supposition that it is sure to do good, the practitioner will soon think that it does. No; the only plan is to watch impartially the effect of medicines on the constitution, for in following the other way I have mentioned, you will kill more in youth than you will save in age.

Climate has been supposed to have an effect in preventing that state of constitution which favours the return of the disease; I tell you it has no such influence. A person who has scirrhous tubercle in England would receive no advantage by going to a warm climate, or by any change whatever. I will give you an instance, which will illustrate this point very well. A woman who was operated on in this country for scirrhus of the breast, went soon after to the island of Trinidad; at the

time she left England the wound had healed. Soon after she reached Trinidad the tumour returned, and the glands of the axilla became enlarged. She was brought back to England with her constitution extremely debilitated: at the time of her return it was winter; she soon sank, and died. In England this person had submitted to an operation: she went to a warm climate soon after; the disease then made its appearance again, and she returned to this country in a cold season, which had no effect in retarding the progress of the complaint; in the warm country the disease was not prevented from returning; in this, its progress was not arrested by the cold.

OPERATION FOR THE REMOVAL OF A SCIRRHOUS BREAST.

This operation is nothing more than a simple piece of dissection; it consists in making a semicircular incision at the upper part of the breast, and over the tumour: in this step you cut through the vessels which supply the scirrhus. When the mammary artery and its branches have been divided, you desire an assistant to compress the vessels by pressure, just above the incision, and you then go on excavating the parts and cellular tissue; the pectoral muscle is laid bare (and it is a good plan always to do this); lastly, it is right to divide the integuments below the tumour, lest, as it sometimes happens, a gland is enlarged in the axilla; then it will be best to remove it, and the intervening part between it and the breast; for if you cut out the gland only, the disease returns, and it is always attended with unfavourable results. The absorbent vessels are the means by which the disease is communicated to the other parts. If the glands in the axilla generally are enlarged, do not operate, for the disease will be sure to return. I never saw an operation performed under such circumstances successful. After the breast is removed, bring the edges together by suture; in the earlier period of my life I did not adopt this practice; I have since found that the wound heals better if sutures are employed than adhesive plaster only. You put one or two sutures, which keep the edges together; when you observe a drawing in of the nipple, always secure that part. This very day I removed a breast with a nipple in this state, in company with a respectable medical practitioner, and I cut through the centre of the nipple, to see whether it had any connexion with the tumour. I saw a scirrhous band going across it to the tumour. I would observe that the scirrhous tumour is not all the disease; there are roots which extend to a considerable distance; and those who gave this disease the name of cancer probably knew more of its nature than we are disposed to give them credit for. It is supposed by some that this name was given on account of the appearance of the surrounding veins.

I should rather say that it was from the appearances on dissection than from anything without. When you dissect a scirrhous tumour, you see a number of roots proceeding to a considerable distance, and if you remove the tumour only, and not the roots, there will be little advantage from the operation; no glandular structure, nor any of the roots should be allowed to remain. Bear in mind what I said of giving medicines before and after the operation. Before the removal of a scirrhous tumour, put the patient under a course of alterative medicines, and afterwards do the same, else the operation will be of no use; in a large proportion of operations the disease returns; I have found it difficult to state an average. If I were asked, "in one half of the cases?" I should say "no;" "if one fourth?" "no;" but the disease returns in the breast or other parts of the body, after an operation in a great number of cases—still I perform the operation; and why? because I feel it my duty to say to a patient with this complaint, that "there is only one chance for you, and that is, an operation; it sometimes prevents the return of the disease, and it may do it in your case." "If this is my only hope," she says, "I will submit to it immediately." Another reason why I perform it is, that now and then you see a patient with this disease in a state of ulceration, worn out by frequent bleedings, fœtid discharge, and most horrible pains; by removing it, hope is again revived, and she is again restored for months, and sometimes for years, to a state of comparative ease. On these two accounts, although an operation may be unsuccessful in one case, and is sure to be so in the other, yet I perform it, for a surgeon is obliged to do it at the solicitation of his patient.

LECTURE XLIV.

FUNGUS HÆMATODES.

VARIOUS names have been given to this disease; it was originally called soft cancer, but having been found materially to differ from true cancerous disease, that name was relinquished, and the one given to it by the late Mr. Hey, of Leeds, viz., Fungus Hæmatodes, is that which is now generally employed.

Although this affection has some resemblance to scirrhous tubercle, yet it differs from it in very many and essential particulars; one of which is, that it attacks persons of all ages after puberty; whereas the scirrhous tubercle, as I explained to you in my last lecture, does not attack the very young, as we rarely see it under the age of twenty-seven. It occurs more frequently then in early life than scirrhous tubercle, and

not so frequently in advanced years. It is very uncommon to observe scirrhus before the age of twenty-seven; but by no means uncommon to see fungus hæmatodes at a much earlier period. This disease, in its earlier stages, by no means feels so hard as the true scirrhus. When you press upon it with the finger, the spot readily receives an indentation; but upon removing the finger, the hollow which it had produced becomes instantly filled again.

In the earlier stages, likewise, there is little pain, which is another strong discriminating mark by which you are enabled to distinguish it from scirrhous tubercle. Practitioners who, for the first time see this disease, and who happen to be unaquainted with the positive and negative diagnostic signs by which it is known, are astonished at the trifling degree of pain which patients feel when these tumours are pressed upon, or indeed when they are even roughly examined. This want of tenderness, then, want of hardness, and want of pain, are the discriminating characteristics which direct your judgment towards forming a correct conclusion as to its true nature; and at the same time will clearly pourtray to you the difference between it and the genuine scirrhus.

In addition to these marks, the tumour which constitutes fungus hæmatodes is not so clearly defined as scirrhous tubercle; it is difficult to say where the diseased structure terminates, and where the healthy structure commences; the base of the tumour is, therefore, diffused among the healthy cellular membrane, or other parts where it shall happen to be situated; and in this respect differs most decidedly from scirrhous tubercle, as I explained to you in the last lecture.

There is still, gentlemen, another diagnostic sign in fungus hæmatodes of the breast, which is, that the disease may advance even to suppuration and ulceration, without the glands of the axilla becoming at all affected.

When this diseas exists, and is removed by the knife, it will rather show itself, should it again appear, in some distant part of the body than in the glands of the axilla. The disease is much quicker in its progress than scirrhous tubercle; it grows much faster, the morbid action appears to be much more active, consequently, in six or eight months it will have acquired very considerable magnitude; whereas in true scirrhus, at the expiration of even two years the disease often will not have reached any remarkable size. I have seen the skin covering fungus hæmatodes of a livid colour as early as the thirteenth week from the commencement of the disease, and in five months I have known it destroy life; therefore I am fully justified in saying that it is much more rapid in its progress than scirrhous tubercle; for we find that it becomes in the course of a few months, of considerable bulk, having a livid surface, and a fluctu-

ating feel; this sense of fluctuation does in reality arise from a fluid; and which fluid, when discharged, has the appearance of coffee. It is composed of serum, the red particles of the blood, and bile; that it is true serum is known by a portion of it coagulating on its admixture with the alkalis, muriatic and nitric acids, and from the application of heat; that there is bile in it is known by the yellow tint which it gives to white paper. I have at this time, in a bottle, some paper which was written upon with this fluid some years since, and the yellowness is perfectly distinct up to the present period. Although the fluid contained in the cyst of fungus hæmatodes is of so dark a colour, yet it is not of a malignant nature; it sometimes is perfectly transparent, being much more clear than the serum of hydrocele, having in it less albumen, and more water; but most frequently the fluid is of a dark colour, resembling coffee, as I before stated to you, and composed of the red particles of the blood, serum, and bile.

Well, as the diseased action goes on, inflammation is excited, and at length the cyst bursts; nature attempts to relieve, by exciting, in the parietes of the cyst, the adhesive process; but failing in this attempt, owing to a peculiarity of constitution, a fungus sprouts forth. Here (holding up a preparation) you see it shooting out in the manner described; the edges of the cyst being everted, or turned away from the fungus. In a short time it becomes of a considerable size, and the discharge from it really enormous; so great, indeed, that it will as completely wet a handkerchief in the space of half an hour, as if it had been dipped in water; and the smell of the discharge is often so disagreeable, that the surgeon who has seen much of this disease will be acquainted with its character the moment he enters the patient's room. Now, gentlemen, this disease has a continued disposition to slough, and from which circumstance it occasionally receives a natural cure; for instances have been known, where the entire tumour has sloughed, and the wound healed kindly, to the permanent relief of the patient. Mr. Cline had a patient in this hospital whose fungus separated in the manner I have just described to you. She was discharged cured from the hospital, but whether the disease ever after returned I am unable to inform you.

The dissections of those who die of fungus hæmatodes show that it generally exists in different parts of the body at the same period; and the cellular membrane, together with many of the glands will be found studded with tubercles; for the disposition of the constitution to produce the disease in one situation naturally operates towards producing it in another, and thus it will be present in many parts at the same time, although its severity in one particular spot will be the immediate cause of death.

(The learned lecturer here exhibited to the class several preparations, illustrative and confirmatory of the foregoing remarks.)

The liver and lungs are very commonly attacked with these tubercles, the liver so much so, that you are often unable to make the least section of it without some of them being observable, showing that every part of this gland is equally filled with them.

The uterus is not unfrequently diseased from fungus hæmatodes; likewise the ovaria; the cellular tissue; the brain and medulla spinalis, but of all the parts of the body most frequently attacked there are none so much so as tendinous structures. And so desirous, as it were, does this disease appear to be to attack these parts, that, we find when it is situated in the breast, it not only grows externally, but penetrates deeply through the pectoral and intercostal muscles, regularly following the course of the tendons and tendinous expansions.

CAUSES OF FUNGUS HÆMATODES.

When many important parts are affected at the same time, it is evident that the cause must be constitutional; in fact, it ever owes its origin to a peculiarity of constitution. Although it may thus arise in almost every important organ at the same time, and be thus generally diffused throughout the system, yet it appears that it may possess merely a local occupation of a part, and the neighbouring structures be entirely free from any morbid or diseased action; for upon removing fungoid tumours, we find that the wounds thus produced heal as kindly as any other wounds caused by the extirpation of any other tumours. In making this observation, I wish it to be understood most distinctly, that your incisions are to be made beyond the discoloured or inflamed parts, for if you cut into the skin which has become reddened, it will, of course, have taken on its peculiar morbid action, and the disease will most unquestionably still continue to grow in that situation. Therefore I particularly caution you never to introduce your knife into the integuments which surround fungoid tumours, should such integuments have become discoloured by the influence of the disease. So, likewise, in amputations for fungoid diseases; if you do not operate at a sufficient distance from the seat of the malady, you will find that the granulations which form upon the surface of medullary structures, will possess a fungoid character, and ultimately put on every appearance of the original disease. Very carefully, therefore, avoid cutting into parts in the vicinity of fungoid diseases; and if you do not, depend upon it that your operations will be rarely successful. It is necessary, for the purpose of promoting the favourable issue of your operations, that you should attend to the state of the patient's constitution, both before and

after the operation. With this view you should allow him a nutritious diet, pure air, and a reasonable proportion of exercise; you should likewise prescribe for him, in the way of medicine, either the hydrargyrus cum creta, or Plummer's pill, together with some bitter infusion and soda. Local means are of very little service in this disease; indeed, I believe, unless they are assisted by constitutional remedies at the same time, that they will prove utterly useless. Some practitioners rest their hope entirely on local applications, but this is truly absurd, as it is next to impossible that a cure can be effected by them.

It has been attempted to cure fungus hæmatodes, by causing it to slough, and it has been endeavoured to accomplish this by means of pressure, which destroys its circulation; at the same time, however, that pressure is employed, you must carefully attend to the state of the patient's general health; for if you do not, your other efforts will be attended with disappointment. Much has been said respecting the largeness of the vessels in these tumours; but if these vessels are large no danger ought to be apprehended from hemorrhage, as the bleeding can easily be stopped by means of pressure. The fact is, that blood-vessels, situated in fungoid tumours, have no contractile power; consequently, when they are cut into, or divided, the bleeding from them will continue for a considerable period, unless pressure be employed.

With regard to the success of the operation, it may be said, that it is more successful at the immediate part operated upon than is the case in scirrhous tubercle, but it certainly returns more frequently in other parts of the body, and in which situations it probably existed in an incipient state at the moment that the operation was performed; it is altogether an unmanageable complaint, and one which is calculated to cast opprobrium upon the practice of surgery.

SIMPLE CHRONIC TUMOUR OF THE BREAST.

This disease is not of a malignant character, and by no means dangerous to life; it is generally very young people who are attacked by it, and we seldom see it in persons above thirty years of age. I will try to describe, in a familiar manner, the mode in which this disease will be exhibited to you. A young person, between the age of fifteen and thirty, will be brought to you by her parents, on account of a swelling in her breast; when you look at her, you see that she has a perfectly healthy appearance, and, in all probability, is much younger than those who are usually attacked by scirrhous tubercle. Her parents being naturally anxious for their child's safety, express their fears of the disease being cancerous; at this you smile, and tell them that cancer does not attack persons of her healthy appearance, or persons so young: upon examin-

ing the breast you find an exceedingly moveable tumour, but more diffused in the surrounding substance than true scirrhus; that is, its limits are not so accurately or distinctly defined, having likewise a lobulated feel, being divided into distinct apartments by septa, producing the same kind of sensation to the fingers as fatty tumours; you have here (delivering a preparation to a student) an opportunity of seeing this kind of tumour, and upon carefully examining it, you will find that the account which I have given you is correct. Well, then, the age and healthy appearance of the person; the lobulated feel of the tumour, and its lying more blended with the neighbouring parts, will at once point out to you that the disease is not cancerous; which, gentlemen, you may inform the person's parents, and likewise tell them that the disease never will become cancerous. I assure you that this disease is not in the slightest degree of a malignant character, neither is it attended with the least danger. Now then, as to the result of these tumours: they may grow larger, and may be attended with pain at the periods of menstruation, but never will prove of serious consequence; upon that you may depend. If, however, the mind should be rendered wretched in consequence of the existence of such a tumour, an incision will instantly enable you to remove it, and thereby allay all mental irritation: but as far as the tumour is itself concerned, and as regards the health or safety of the patient, the operation is by no means necessary; the size of the tumour is generally from that of a filbert or walnut to that of a billiard ball. Here are some preparations (giving them to the students) in which you can see their general size and character; here, however, is one of very considerable magnitude; it appeared that the general health of the woman from whom this tumour was taken, was very little affected; she felt pain in the tumour at the menstruating period, but there was no broken state of constitution, or general debility. The causes of these tumours are usually obscure; it is difficult to say what gives rise to them, but I believe a frequent cause may be traced to the pressure produced by the whalebone and steel busks usually worn in stays.

Treatment.—I do not find that medical treatment has any influence upon these tumours; you may, however, for the purpose of correcting the state of the constitution, should any thing amiss exist in it, give the hydrargyrus cum creta, or Plummer's pill, together with soda and rhubarb; these medicines, whatever they may accomplish towards preventing the growth of the tumour, certainly will not disperse it when once formed; at all events, if you do not try medicines, you cannot relieve by them: in the use of mercury, however, be particularly careful not to push it too far, for should you do so, the remedy will prove much more dangerous than the disease; and it is likewise a hazardous expe-

riment to administer mercury to young people who are exposed to the vicissitudes of our climate. The worst that can happen is the removal of the tumour by the knife; an operation which is not attended with the least danger, and always succeeds in affording permanent relief, for the disease does not return. The vessels which supply these tumours are by no means large. I recollect on one occasion, however, when a surgeon was removing one of them from a woman's breast in the other hospital, that upon separating the base of the tumour from its attachment, so violent a gush of blood took place, as for the moment completely to appal the surgeon, and induce him to believe the knife had penetrated the patient's heart; subsequently it was discovered that one unusually large vessel, which supplied the tumour, had been divided, and from thence the violent bleeding arose. Instead of the vessels being of great size which feed these tumours, it is found, upon dissection, that they are merely small branches from the neighbouring cellular tissues; this, then, is what I name the simple chronic tumour of the breast. It now and then occurs that the breast, as well as other parts of the body, is attacked by *Adipose Tumours*, and some of them have been known to acquire enormous dimensions. I have myself removed one from the breast of a woman which weighed fourteen pounds ten ounces. This is the tumour (the professor here put his hand upon a preparation which stood upon the table before him), and although it may appear to you an operation of a most formidable nature, yet it was not so; there was no risk attending it, and the only peculiarity which existed was, that the veins were much larger than in ordinary tumours of the breast.

The next tumour which I shall describe is very common in young people, and I have called it

THE IRRITABLE TUMOUR OF THE BREAST.

Like the simple chronic tumour, it generally occurs in persons from fifteen to twenty-five years of age. These young persons are of sanguineous temperament, and often of lovely aspect. The parents, in this case, like the former, show the greatest solicitude for their daughter's welfare, and anxiously inquire of you if the disease be not cancerous? You endeavour to soothe their minds by representing to them its harmless, inoffensive nature, at the same time telling them that cancer does not attack individuals so young or so healthy as their daughter. Upon the breast being bared, and upon examining it, the moment you touch the tumour you will find that the patient will instantly shrink from you, and will be so alive to the most trifling pain, that she may be compared to a sensitive plant. If you examine the tumour otherwise than with gentleness, she will experience pain for hours, and even days

afterwards, so exquisitely tender is this irritable swelling. Although it is painful in common, yet the tenderness and pain immediately before the period of menstruating are almost incredible; the pain extends from the breast to the arm on the affected side, and down to the fingers' ends, and has even been known to affect the sight. There is no necessity for alarm in these cases; the cause of the disease is easily ascertained: it merely arises from functional derangement. There is no visceral disorganization, and to afford relief, you have merely to adopt such measures as are calculated to restore to its proper quantity and condition the uterine secretion.

It has happened that some practitioners have removed a great portion of the glandular part of the breast on account of these irritable swellings. Such operations are not only unnecessary, but highly improper, as it is impossible that they can prove of any service, for the irritable breast is sure to return unless the menstrual discharge be restored to its natural state; to accomplish this, the best medicine you can administer is *misturi ferri composita*, an ounce and a half of it two or three times a day; or from two to five grains of the ferrum ammoniatum, two or three times a day, and from this combination of ammonia and steel I have seen the greatest possible benefit result to the patient. As the uterine discharge increases, the irritation in the breast lessens, and will soon completely disappear.

Several surgeons are in the habit of applying leeches to breasts thus affected; whether they prove advantageous or not, I think, is exceedingly equivocal, for by diminishing the strength, it is possible they may prove highly injurious. Be particularly upon your guard against operating for the removal of these irritable swellings; such operations will prove hurtful to your reputation. Rather attempt to cure the disease by restoring to its proper quantity the uterine secretion; the irritable tumours of the breast are so common, that you will not have been in practice six months without having met with several such cases.

OF CARCINOMA IN THE NIPPLE OF MAN.

The nipple of men is sometimes affected with cancerous ulceration, similar to the breasts of women: it begins in the same way, in the form of the scirrhous tubercle; here, however, it is generally in the immediate neighbourhood of the nipple. An incrustation forms on the surface of the nipple; this drops off, another succeeds it, and another to that again, until an ulcer is produced, and ultimately the whole nipple is destroyed; then the glands in the axilla, and likewise those above the clavicle, become diseased; and men die from this complaint

precisely in the same manner as women do from cancerous breasts. In this disease the chance of success from an operation depends upon its being performed before the axillary glands become diseased; if those glands are diseased, you should not then employ the knife; the result of two cases, which I saw some years ago, fully convinced me of the propriety of what I am now telling you. In both those cases the glands in the axilla had partaken of the diseased action, and the disease appeared there with as much violence as ever, after it had been removed from the breast. The medicines which are used for the carcinoma in the female may also be employed here.

Tumours occasionally exist around the areola of children, from seven to twelve years of age. I do not know whether they have ever been described or named by authors, but I have always called them the *Areola Tumour;* they generally appear between the age of seven and nine; but I have seen them in children as far advanced as twelve years of age. Upon examining the breast, you will find a swelling as large as a half-crown, just round the areola; flattened towards the outer edge, but convex in the centre, that is, the nipple, which the swelling closely surrounds.

Boys as well as girls are subject to this disease; but I never saw either afflicted with it after the age of puberty, nor anterior to the age of seven.

The mode to adopt for their cure is to apply the emplast. ammon. c. hydrarg., having a hole in its centre, for the reception of the nipple; this plaster will generally succeed in effecting a cure in the space of six months: it should be occasionally changed or renewed—say about every eight or ten days. At the same time that you are using the plaster, you should give to the patient the eighth or sixteenth of a grain of the oxymur. hydrarg. in ʒi. of tinct. cinchon. bis. die. Or if the bowels should be disordered, you may substitute for the tinct. cinchon. ʒi. of tinct. rhei. The plaster constantly used, and these medicines occasionally taken, you will generally find, in the course of six months, that the complaint has been subdued. I have known it cured as early as the third month from the commencement of this treatment.

OF THE LACTEAL TUMOUR.

Women, shortly after their confinement, are frequently annoyed by these tumours. A female will come to you with an immense swelling on the breast, and, upon examining it with your hand, you readily perceive a sense of fluctuation; this leads you to believe that it is chronic abscess; but you will find no sign of inflammation, nor any inconvenience from pain. With a lancet you open the sac, and there

will be discharged a considerable quantity of milk; the sac is filled by it only; and if the milk be put by for twenty-four hours its surface will be covered with cream. After the milk has been evacuated, you should introduce into the opening made by the lancet, a sponge or cotton tent; this, in a short time, will excite inflammation in the sides of the sac; adhesive matter will be thrown out, which, gluing the parietes of the sac to each other, will be the means of gradually obliterating the cavity, and thus produce a permanent cure. This treatment is effectual in relieving such cases; it is the best that I am acquainted with, and I have seen it most decidedly successful in at least a dozen instances.

LECTURE XLV.

ON RETENTION OF URINE.

It is not my intention to enter at any length into the causes which produce retention of urine; for this part of the subject I shall leave until I describe to you the venereal disease, which I shall shortly have occasion to do. I shall at present merely state, that the most frequent causes of retention of urine, are strictures in the urethra, and enlargement of the prostate gland. There are several other causes, which give rise to this state; an accumulation of blood in the bladder; stones in the urethra, or the pressure of matter between the prostate gland and the rectum, will sometimes occasion a necessity for opening the bladder. In the female, the most frequent cause of retention of urine is, retroversion of the uterus. I have also seen a cancerous disease in the vagina, closing the meatus urinarius, and thus rendering it necessary to puncture the bladder. Before I speak more particularly of the means which surgeons recommend for relieving retention of urine by the knife, I will first show you the method of introducing the catheter into the bladder. No man should think of performing any operation by puncturing the bladder, or in any other way, without first endeavouring to relieve the patient by the introduction of the catheter. The form and size of the catheter are subject to some variation; that which is used for stricture in the urethra differs materially from that which is required in cases of enlargement of the prostate gland. The prostate catheter, if I may so call it, should be two inches longer than the common catheter; and the curve is considerably greater than that of the catheter for strictures in the urethra. The latter is, indeed, generally too much curved; the curve should be, as nearly as possible, like the natural curve of the urethra. The catheter is not only used for the purpose of drawing off the water, but it is often employed as a bougie; indeed, I commonly use

the common catheter, as I shall hereafter have occasion to state to you, for the purpose of dilating strictures in the urethra, and, consequently, rendering any other operation unnecessary. When you are called upon to introduce a catheter, place yourself upon the right side of the patient, pass it down under the arch of the pubes perpendicularly, until you reach the membranous part of the urethra; and then do not continue to pass the instrument in that direction, for if you do, you will push it towards the rectum instead of entering the bladder; but having reached the membranous part of the urethra, you have only to move your hand thus (showing the motion), and the instrument will immediately enter the bladder. This is the whole secret of passing a catheter; you have only to bear in mind the two motions which are necessary to effect your purpose, for if you continue to press the catheter onwards, when you have reached the membranous portion of the urethra, you will press the point of the instrument upon the rectum instead of introducing it into the bladder. In cases of enlargement of the prostate gland, there will be some difference in the mode of passing the catheter; and it is a difference which it is somewhat difficult to explain. When the prostate is enlarged, the urethra is pushed forward so as to be doubled on the point of the instrument. You must, in this case, pass the catheter down to the apex of the prostate gland, then carry the instrument towards the abdomen, as to push the urethra as much as you can towards the perinæum, and then having brought the urethra into a straight line again, depress the point of the instrument, and you will be enabled to pass it into the bladder. (The learned professor proceeded to show the method of passing the catheter on the dead subject.) I certainly do hold that it is the fault of the surgeon, if the bladder is ever tapped for enlargement of the prostate gland: whenever such an operation is performed for this disease, it arises entirely from the surgeon's want of knowledge and adroitness; for any man may readily pass an instrument into the bladder in these cases, if he understands the formation of the parts, and has been in the habit of introducing instruments into the bladder. I have now for many years been engaged in the practice of these hospitals, and I have seen something of the private practice of London, and I can assure you that I have never yet seen a case of enlarged prostate, either in these hospitals or in my private practice, in which it was necessary to puncture the bladder. I know that it has been done repeatedly; but if the surgeon is sufficiently adroit, it is never necessary. There are cases of stricture in the urethra, in which an operation for relieving the bladder of an accumulated load of urine is rendered necessary. Let us consider the means which different surgeons have proposed for this pur-

pose: and first let me observe to you that the bladder has not unfrequently been punctured above the pubes.

THE OPERATION OF PUNCTURING THE BLADDER ABOVE THE PUBES.

This operation is founded on the following anatomical circumstances:—In the natural formation of the parts, the peritoneum falls from the inner side of the rectus, over the upper part of the bladder, and is reflected backward to the fundus, leaving a space filled with cellular tissue between the pubes and the reflected peritoneum. This is the space in which the surgeon performs the operation; but when the bladder is excessively distended with urine, it will sometimes happen, that it reaches as far as the navel, occupying a great part of the anterior portion of the abdomen. An instance of this may be seen in a cast taken by Mr. Solly, from a case which was brought a few days ago into the museum. (The learned professor exhibited the cast to the class). The peritoneum is not within the reach of the pubes, but is three inches removed from it; consequently, it is reflected over the bladder, and a large space is left for the operation between the reflected peritoneum and the pubes. Your object in performing the operation is, to avoid wounding the peritoneum, which is in the highest degree dangerous. Cases have occurred, in which the peritoneum has been punctured, and yet the patient has survived; but such a circumstance could only arise from the unskilfulness of the surgeon. The operation of puncturing the bladder above the pubes is one of the most simple and easy; it requires very little anatomical knowledge, and very little adroitness on the part of the surgeon who performs it. All that is required is this—make your incision through the integuments to the extent of an inch above the pubes. It is best to open the integuments in the first instance, because the trocar will afterwards enter the bladder with more ease, and because, if there should be any extravasation of urine by the side of the instrument, it will more rapidly escape. The incision should extend as far as the linea alba; with respect to the direction in which the trocar is to be passed, you must not, on any account, direct the point of the trocar downwards towards the anus, but obliquely from the penis to the back of the pelvis, just towards the basis of the sacrum. The trocar and canula being introduced, the water passes through the canula; an elastic gum catheter should be introduced through the canula, and left in the bladder. It is better not to leave a silver canula in the bladder for any length of time, because it is liable to ulcerate the posterior part of the bladder. Sharpe objected to the operation above the pubes on

that ground; but this objection is removed by the substitution of an elastic gum catheter. There was another objection taken by Sharpe to this operation. He found that the urine was extravasated between the bladder and the posterior surface of the abdominal muscles, and accumulating in the cellular tissue, produced large abscesses, occasioning a high degree of irritation, and often destruction of life. This danger may be prevented by using an elastic gum catheter with a plug, by which the urine may be occasionally withdrawn, or a bladder attached to its extremity, into which the urine may distil. The catheter may be left in the bladder for a great length of time without producing any injurious consequences.

A man was tapped in the bladder in a situation which is not usual, the linea semilunaris; and a female catheter was introduced into it, and worn upwards of twelve months. The operation was performed by Mr. Hare, a surgeon in Essex. I saw this patient twelve months after the operation had been performed; he had then the female catheter in his bladder. I removed this catheter, and succeeded in introducing a common one into the bladder through the urethra, with much difficulty, for he had a very bad stricture. In a short time he passed his urine freely by the natural course. I have seen some cases in which the bladder has been punctured above the pubes, where the patient has drawn off his water at pleasure, by turning a little silver cock. A professor at Edinburgh, who underwent this operation, wore a tube in his bladder for some years after, by which he drew off his water at pleasure. A few days ago, I saw Mr. Copeland Hutchison perform the operation of puncturing the bladder above the symphysis pubis, for an accumulation of blood in the bladder, which prevented the urine from passing by the urethra. The operation is very easily performed; it is not liable to the objections which were formerly made to it, and it is in general safe. In the female, it is absolutely necessary that this operation should be performed in cases of retention of urine, from retroversio uteri, and from a cancerous disease affecting the meatus urinarius. Opening the bladder by the vagina is a very unsafe and disastrous operation in its consequences; as the urine distils into the vagina, occasioning the highest degree of excoriation, attended with dreadful suffering and constitutional irritation. It is an operation which ought never to be performed.

The next operation which I shall describe to you is that of

PUNCTURING THE BLADDER BY THE RECTUM.

I must recall to your minds a little of the anatomy of the parts; you remember that the prostate gland bounds the bladder at the under part,

that directly behind it the vasa deferentia meet, and pass down at an acute angle, the sides so nearly approaching where they first touch the prostate gland, that there is no room for the introduction of an instrument without injuring either one or the other of these tubes. The vesiculæ seminales which are situated on the outer side of the vasa deferentia are not in danger from the operation. There is a triangular space behind the prostate gland, which affords room for the instrument; and how is this space bounded? In the fore part it is bounded by the meeting of the vasa deferentia, which forms the apex of the triangle; the sides of the triangle are formed by the vasa deferentia, which diverge from each other, passing from the prostate gland backwards; the basis of the triangle is formed by the peritoneum, which is reflected from the posterior part of the bladder to the upper part of the rectum. Taking advantage of this space of the bladder which is not covered by peritoneum, you pass the instrument which you employ for the purpose of relieving the bladder, about three-quarters of an inch behind the prostate gland, into the back of the bladder. You must not pass it directly behind the prostate, for if you do, you will castrate the patient either on one side or on the other, as the vasa deferentia are situated close at the basis of the prostate gland. If you carry the instrument three-quarters of an inch, or even half an inch, behind the prostate gland, the vasa deferentia will escape. No man should think of introducing the trocar directly behind the prostate gland, but at the distance of at least half an inch from it: the distance of three-quarters of an inch is better. When you pass your finger into the rectum you will feel the bladder projecting into it. It is elastic, and yields with difficulty to the pressure of the finger; you will readily feel the fluctuation. This leads you to the spot where the trocar is to be introduced; the triangular space is directly presented to the point of the instrument. This is a very easy operation, and may be had recourse to by a surgeon who consults his own ease rather than the advantage of his patient. I will describe to you the steps of the operation, and then mention the objections which may be urged against it. You introduce your finger about an inch behind the prostate gland, and then upon the upper part of the finger pass the trocar, which may be either curved or straight, to the posterior part of the bladder. When the point of the instrument rests upon the upper part of the rectum and the posterior part of the bladder, you pass the trocar into the bladder by a slight and sudden motion of the hand. As to the direction in which the trocar is to be carried, it is obliquely upwards and forward. If you were to push it through the fore part of the abdominal parietes, it would pass midway between the pubes and the navel. The place at which the point of the

instrument should penetrate, supposing it to be carried through the bladder, is half-way between the umbilicus and the symphysis pubis. In this direction it will readily enter the bladder. The objections to an operation which is so easily performed are these: Although you introduce an elastic gum catheter for the purpose of allowing the urine to distil through it, some of it will trickle by the side of the instrument into the rectum, and produce a high degree of irritation. This is not the case in every instance; but I have seen a great number of instances in which the rectum has been brought into a state of severe disease in consequence of this operation. Mr. C., a surgeon of Gloucester, had a patient under his care for more than two years, who suffered from a high degree of irritation in the rectum after this operation, a sinus having formed between the bladder and the rectum; he died from the consequences of this disease. This is an objection which may be urged against puncturing the bladder in this way; and though the operation sometimes succeeds, it is, upon the whole, one which ought not to be resorted to. I went down into the country, some years ago, to see an elderly gentleman who was labouring under retention of urine. When I arrived, the surgeon told me that he had relieved his patient by puncturing the bladder through the rectum; I said I was happy to find that his patient was relieved, and was about to go back, when he requested me to see his patient. I went into the room, where I saw a very old gentleman, and upon asking him how he felt, he told me that he was greatly relieved by the operation which had been performed. I asked the surgeon the cause of the retention of urine, and for which he had punctured this gentleman's bladder; and he replied, an enlargement of the prostate gland. Indeed, said I, let me see whether I can pass a catheter into this gentleman's bladder. I took a large catheter from my pocket, which I passed with the greatest ease. It was this, and a great number of similar cases, which induced me to say that it is perfectly unnecessary to puncture the bladder by the rectum, or in any other way, for an enlargement of the prostate gland. You may rely upon it that any surgeon who punctures the bladder, under such circumstances, is a particularly clumsy fellow. *(A laugh.)*

(The learned professor proceeded to show the operation of puncturing the bladder by the rectum on the dead subject.)

OF THE OPERATION OF PUNCTURING THE BLADDER THROUGH THE PERINEUM.

This is so much like the operation for stone that I need not dwell much upon it. It consists in puncturing the bladder by the side of the prostate gland: there is no danger of injuring the peritoneum in this

operation, because it does not reach the anterior part of the bladder. You make an incision in perinæo, as in the operation for stone, cutting down on the bulb of the penis, and drawing it to the patient's right side. You then carry the knife within the branch of the ischium till it reaches the prostate gland, which you push to the patient's right side. You then carry the instrument obliquely upwards into the bladder, your finger resting on the prostate gland. (Sir Astley performed the operation on the dead subject.)

There is no great difficulty in any of these operations, but let us now come to this question, whether the bladder should be punctured at all? The last operation requires a greater share of anatomical knowledge than the others; this is of course no objection to it, for no man ought to operate on the human body who has not a perfect knowledge of anatomy. The objection to it is, that it generally produces a great deal of constitutional irritation, which we ought always, if possible, to avoid. I hold that we ought to avoid all these operations, and that puncturing the bladder at all for stricture in the urethra, or enlargement of the prostate gland, is perfectly unnecessary. I will tell you why I hold this opinion, gentlemen; for if I were to make this statement without assigning my reason for it, I should be doing you injustice. I am aware that what I now say is not merely addressed to you, but that it will go forth to the world, and I have no hesitation in declaring my opinion, however widely that opinion may be disseminated, that I consider the operation of puncturing the bladder, with very few exceptions, entirely unnecessary. I will explain to you the grounds on which I entertain this opinion. I was lecturing here one evening, when one of Mr. Chandler's dressers came to me, and requested me to see a man who was labouring under retention of urine in this hospital. I went immediately, and found that he was suffering under retention of urine, from the use of a caustic bougie. I desired him to try to make water, and while he was trying I put my finger on the perinæum, and distinctly felt the water rush against the stricture, which was just opposite the arch of the pubes, the urethra having become enlarged behind the stricture. I directed him to be carried into the operating theatre, and just making an incision under the symphysis pubis, I desired him to try to make water. While he was trying, the urethra being very much distended with urine, I opened it, and the urine flowed. He was put to bed without undergoing any other operation; the inflammation produced by the caustic bougie subsided, and common bougies were afterwards used. The man was completely relieved by the operation, and this is all I have done since in cases of accumulation of urine in the bladder. I desire the patient to draw up his legs as if he was going to be operated upon for

stone, and I tell him that I am just going to make a small incision, which will not expose him to any risk. If I find a difficulty, on account of the stricture being situated very near the apex of the prostate gland, on opening the urethra I introduce an instrument in the way in which many of you saw me perform the operation a few days ago. Instead of carrying the point of the instrument towards the bladder, I direct it outwards, so as to bring the urethra into the perinæum, and making a cut behind the point of the instrument, I introduce a probe and carry it to the stricture. If the incision is not sufficient, I carry the opening still further, introduce a director, and upon it a knife, with which I divide the membranous portion of the urethra. The result is, that the urine is passed by the perinæum, and the bladder is relieved from the accumulated load of urine without being in the slightest degree injured. It is said that this is an operation attended with great difficulty. I will acknowledge that there is some difficulty in it, if a man is not quite clear as to the situation of the different parts of the urethra; but this is what every surgeon ought to be perfectly acquainted with. Suppose I wished to cut into the membranous portion of the urethra, where should I make the incison so as to be quite sure of cutting at once into it, even without the introduction of a staff?—directly under the symphysis pubis. A few days ago I had occasion to perform the operation which I am now describing. In going round the wards I was told that there was a man with a very bad stricture; I desired that he might be carried into the theatre. I found it impossible to introduce an instrument into his bladder; I consequently made an incision on the stricture. This incision led to the discovery of some very solid bodies, which proved to be two calculi directly behind the stricture. I first introduced a probe, and then a director, which I passed into the bladder. In order to overcome the stricture, I did not divide it with the knife, but passing a catheter down to the stricture, I forced the stricture with the catheter, carried the instrument on through the wound into the bladder, and left it there. Now was this man's life endangered by this operation? Was he less likely to recover? See him gentlemen, and judge for yourselves; he was completely relieved by the operation, and he is now doing extremely well. It may be supposed that this operation is a little bantling of my own, and that I am therefore desirous that others should favour it. No, gentlemen, these are not my sentiments. I am anxious only that you should adopt that operation which is best calculated for the patient's safety, and your own reputation. If you can relieve a patient from an accumulated load of urine, by an operation which leaves his bladder in a sound state, I certainly think you should prefer that operation. Some, at least, of the surgeons of these hospitals concur with

me in this opinion. Mr. Green and Mr. Key have performed this operation repeatedly. The other day, indeed, when the man was placed on the table, and I hesitated whether I should puncture the bladder above the pubes for I think it right occasionally to vary our operations, for the benefit of the students, where it can be done with safety to the patient, Mr. Key interposed, and said to me, " Oh, no! do not quit your operation, of opening the urethra." This is certainly the operation which I advise you to perform; and if you feel any difficulty in performing it, go, gentlemen, to the dissecting room, and study till you have surmounted that difficulty.

The learned professor concluded, by showing on the dead subject, the mode of extracting small stones from the bladder, without the use of cutting instruments. He exhibited to the class the forceps invented for this purpose, at his own suggestion, by Mr. Weiss, of the Strand, to whose ingenuity and skill he paid a well merited tribute. With this instrument, Sir Astley extracted no fewer than eighty-four calculi from the bladder of the Rev. Mr. —, of Barnwell, in Cambridgeshire. He had since extracted thirty calculi from another person. Some years since he performed the operation of lithotomy on a young man at Wapping. A few months ago this person called upon him, and said that he was sure he had a stone in his bladder. The learned professor said that if it was a small one he could extract it from him without cutting, and he succeeded in immediately extracting a stone from the bladder. The same patient called again upon him shortly after, and said he was convinced there was another stone in his bladder. No stone could be found, but the forceps were expanded on being withdrawn, so as to stretch the passage. The patient was recommended to resist the inclination to make water for a considerable time; and the first time he made water he passed three or four small calculi. Sir Astley observed, that by regulating the screw of this instrument, so as to increase its force, even large triple phosphates might be broken and removed from the bladder.

LECTURE XLVI.

ON DROPSY OF THE ABDOMEN.

THERE are two species of this Dropsy, viz., *Peritoneal* or *Ascites*, and the *Encysted* or *Ovarian*. The Peritoneal Dropsy is an accumulation of water in the cavity of the peritoneum, and the Ovarian Dropsy is a collection of water in the membrane which covers the ovarium: first, then, of

ASCITES, OR PERITONEAL DROPSY.

The first symptom which a person feels who is affected with ascites, is pain on the abdomen being pressed; every day this symptom becomes more and more severe, until even the clothes, if ever so loosely worn, will feel too tight on the body and the person will be desirous of having them removed. Well, the body goes on gradually enlarging, until, at length, the person applies for medical advice. Upon examination, it will be found that the intestines are floating in a fluid, the abdomen enlarged, (in proportion, of course, to the quantity of fluid within,) and upon loosening the clothes, applying a hand to each side of the body, and gently using pressure with one hand and slightly tapping the abdomen with the other, or giving the body a gentle sudden jerk from side to side, fluctuation will be readily perceived. As the secretion of water increases, the abdomen becomes more tense, pressure is produced on the diaphragm, which occasions a difficulty of breathing, which is more especially felt in the hurry of exercise, so that dyspnœa at length becomes a very distressing symptom, arising from the accumulation of water in the abdomen, until it reaches the lower part of the diaphragm, in consequence of which the contraction of that muscle becomes necessarily impeded, and the difficulty of breathing thereby produced. As the abdomen increases, fluctuation may, as I before stated to you, be easily distinguished, by applying your hand to one side of the body, and by gently tapping the opposite side with the other, the undulations of the water will be readily felt by the fingers which are pressing on the abdomen: thus, then, the fluid being so readily felt, and the symptoms so manifest, viz.:—

The difficulty of breathing, the great increase of that quickness, on taking exercise, the inconvenience arising from the slightest pressure by the clothes, and the gradual enlargement of the abdomen, so strongly pointing out the true character of the disease, it is hardly possible you can form an incorrect opinion respecting it.

The quantity of water usually drawn from individuals affected with ascites, is from twenty-five to thirty pints; in this respect, however, as you may suppose, there is considerable variation, but the quantity a surgeon expects who has performed the operation of tapping on many persons, is what I have just stated to you; and from twenty-five to thirty pints, the first time the operation is performed, will be the quantity generally drawn off.

The fluid secreted in ascites is serous, but does not contain so much albumen as serum in general: when ascites is present, and inflammation of the abdomen follows, it will occasionally happen that so large a

quantity of adhesive matter will escape from the vessels as to mix with the serum, and cause it readily to coagulate, by the addition of the mineral acids or alcohol; but such a quantity of adhesive matter as produces this effect is not often met with. The fluid, therefore, found in ascites, is more of a watery nature, having in its composition less albumen than serum in general.

THE CAUSES OF ASCITES.

The most common cause of ascites is disease of the liver: in this period of our session it would be impertinent in me to describe to you the anatomy of this part; you will, therefore, readily understand me when I say, that diseases of the liver, by impeding the circulation of the blood through that organ, by obstructing its free passage, must, of necessity, occasion a congestion of blood in the vessels of the mesentery, stomach, spleen, pancreas, and neighbouring parts; and for the relief of this congestion, nature is under the necessity of effusing, from the filled vessels, the serum which we subsequently find in the bag of the peritoneum.

But besides this common cause of ascites, arising from the mechanical obstruction of return to the blood, there is another cause which very frequently produces the disease, viz., enlargement of the abdominal viscera; say the spleen, for example; from its enlargement, it presses upon and irritates the peritoneum; a greater quantity of blood than usual is then determined to the part with a view of getting rid of the irritation, which, however, still continuing, the serum becomes secreted so profusely, as to produce the disease of which I am now speaking; so that although the two causes I have mentioned are widely different in principle, yet in effect they are precisely similar.

In the first it is produced through mechanical obstruction; whereas, in the last, it is the result of local irritation; besides the causes just named, there are others which produce it; the most common is the debility arising from fever. Mercury likewise will give rise to it, if administered in such quantities as to exceed or overcome the powers of the body in debilitated constitutions; the two last mentioned causes are favourable ones, and ascites is frequently cured when occasioned by them.

A young man had the operation of paracentesis performed for ascites which had been produced by mercury; three quarts of water were evacuated; this young man recovered. I do not mention it as an extraordinary case, either to show that mercury will produce dropsy, or that his recovery from ascites was extraordinary; but to point out to you the impropriety of tapping a person at so early a period of the disease, when the operation is attended with hazard, from the danger you run of

wounding the viscera; I do not consider a surgeon justified in performing the operation of paracentesis, when the collection of water is so small, as in this case, and more especially as ascites, when caused by debility, arising either from fever or mercury, is so generally and readily remediable by medical treatment.

Diseases of the heart, lungs, and other organs, will likewise produce ascites, but when it results from affections of the two first mentioned organs, the disease is scarcely ever ascites alone, but is generally combined with hydrothorax; it is very, very rare to see ascites as the effect of disease of the heart or lungs, without its being at the same time accompanied by hydrothorax.

Treatment.—Now, gentlemen, medical treatment, when judiciously pursued, is very often successful in the cure of ascites: in the use of medicines, however, you must take care to direct their influence against *the cause of ascites;* therefore, if the liver is the defective organ, you should endeavour to restore its healthy functions, and in this attempt your efforts will frequently be crowned with success, unless the disease has existed so long a time as completely to have broken up the constitution.

When the disease is occasioned by local irritation, arising, for example, from enlargement of the spleen, you will then find great difficulty in performing a cure; but, gentlemen, it is not so in dropsy, arising from debility, independent of disorganization. I again repeat to you, that ascites thus occasioned can be easily cured by medical means.

Those who indulge in the use of ardent spirits are likewise often affected with dropsy of the abdomen; the spirits heat and stimulate the stomach, liver, duodenum, and neighbouring parts, and act upon the same principle, and produce the same result, as the irritation arising from an enlarged spleen; they occasion a great determination of blood to the parts, and an increased secretion of fluid. Upon the employment of medicine and an abandonment of the pernicious habit of spirit-drinking, this disease may readily be overcome, and in that respect it differs widely from ascites arising from enlargement of the viscera, occasioning local irritation. If the patient will but forego the use of spirits and live temperately, the disease may be cured; and so may dropsy which is produced by debility, after fevers. When, however, the disease is a consequence of disorganization, your remedies may probably fail, for the malady is then caused by other complaints, over which medicines have no power.

MEDICAL REMEDIES TO BE EMPLOYED IN ASCITES, OR DROPSY OF THE ABDOMEN.

The medicines which experience has proved to be the most beneficial in dropsy of the abdomen, are calomel and squills; one grain of calomel, and three of squills, in a pill, or two grains of blue pill combined with three grains of squills; one of these should be administered every night, or every other night, and in the day you should give a mixture, composed of from seven to ten grains of carbonate of ammonia, one drachm of spiritus ætheris nitrosi, twenty drops of tinctura digitalis, and an ounce and a half of mistura camphoræ. This medicine, given once or twice a-day, with one of the above pills at night, will often succeed in restoring a person to health, whose constitution may be considered so broken and faulty, that it may be deemed impossible for him ever to regain a sound state of body. Should the dropsy have arisen from the irritation caused by ardent spirits, these must be relinquished, or the complaint will not disappear. There are other medicines which are powerful in producing an absorption of effused water, and carrying it off by the kidneys and by stool; the most active of these is elaterium; it is, indeed, so active, so severe in its effects, so destructive, that you must never give it to persons of advanced years, nor to those who labour under great debility. In dropsy, however, which occurs in the middle of life, where there is strength to bear its operation, this medicine will be found a most valuable remedy. Much caution must be exercised when you are giving it, for it is so violently drastic, that a large dose given at once may prove destructive to life; you should, therefore, as it were, feel your way with it, by giving at first small doses, and carefully ascertaining what quantity the patient's constitution will bear. In the hands of a judicious practitioner, this medicine will be found truly valuable; it must, however, be exhibited to those only who have strength, and in no instance to the aged and infirm, unless in exceedingly small doses. An operation, called paracentesis, or tapping, is occasionally performed for the purpose of relieving ascites, and this operation every now and then succeeds in removing the disease; this happy result can only occur in such cases where the disease has been the effect of debility, arising from some kind of fever, or from the abuse of mercury. If the operation should not cure, it will tend materially to diminish the sufferings of the patients, by relieving the load under which they labour, and by removing, in great measure, the difficulty of breathing, caused by the water accumulating to such an extent as to press upon the lower surface of the diaphragm;

the removal of the water under these circumstances will likewise afford a better opportunity for the trial of medicines; this operation has also produced a permanent cure, when such a result was totally unexpected on the part of the medical practitioner. I recollect the case of a young man at Guy's, who had recovered from typhus, but who had afterwards an accumulation of water in the abdomen, on which account I was requested to see him by the late Dr. Marcet. He had anasarca as well as ascites; I tapped his abdomen for the ascites, and punctured the lower part of the abdomen and insides of the thighs, for the anasarca. This young man was in an exceedingly weak state, and I did not imagine he would have recovered. I met Dr. Marcet three weeks afterwards, who asked me what I thought had become of the patient whom I had tapped? I replied that I did not know; probably, I said, he has died. "No," said Dr. Marcet, "he is perfectly cured, and if you like you can see him." This, gentlemen, was a most fortunate case, but the greatest misfortune is, that such cures seldom occur.

The next subject on which I shall speak is the

OVARIAN, OR ENCYSTED DROPSY.

One of the principal differences that exists between this and the former disease is, that the ovarian dropsy is entirely local: a person may be attacked by it who is in perfect health; indeed the health of the female may be as good when she has this disease as a man's may be when he has hydrocele, and these diseases are somewhat similar, both having a local origin.

After the encysted dropsy has existed for a short time, a small tumour will be perceived just above Poupart's ligament, lying upon the brim of the pelvis, in the hollow formed by the iliacus internus muscle; no fluctuation can be perceived in it at first; as it increases, it gradually rises as high as the kidney of the affected side, it then crosses the abdomen, and fills the opposite side; it thus forms on one side, grows to a considerable size, then passes to the opposite side, and thus becomes of very considerable magnitude. There is no pain in the progress of the complaint, and the principal inconvenience that arises from it, when the tumour is situated in the pelvis, is its pressing upon the bladder, and interrupting the free flow of urine.

It is necessary to have the abdomen very much distended, before fluctuation can be perceived; it is not by any means so distinct here in its early stages as in ascites, and requires considerable time before the fact can be correctly ascertained.

There is about the same quantity of water drawn out in ovarian dropsy as in ascites, viz., from twenty-five to thirty pints, and when the swell-

ing occupies both sides of the abdomen, you will not find much variation in these quantities.

You may form some idea of the size that they sometimes reach, by this enormous bag (here the professor showed to the class an exceedingly large, dried membranous cyst); this is the cyst of an ovarian dropsy, and it contained ninety-seven pints of water, being twelve gallons and a pint, and is not the largest that has been known. I have heard of their containing above a hundred pints; and in one case, from between a hundred and twenty to a hundred and thirty pints. The woman from whom this cyst was taken, would not permit the operation of paracentesis to be performed, and therefore, in all probability, lost her life through her obstinacy; she grew, as you may imagine, a most unwieldy figure, and was obliged to be wheeled from place to place, not being capable of exercise.

Now, gentlemen, it sometimes happens that the ovaries become diseased, and grow to tumours of an immense size; here is one which was given to me two or three days since by Mr. Callaway; you see of what immense magnitude it is; it weighs thirty-nine pounds some ounces; it was removed after death from an elderly woman, but the history of the case is unknown to me; it is not of a malignant character, and appears to be of the same nature as simple chronic tumour of the breast.

The fluid contained in the cyst of ovarian dropsy differs considerably in different subjects: in some being serous, in others mucilaginous, and occasionally purulent. The fluid sometimes is so thick when mucilaginous, that it will not escape through a common-sized canula, and you are under the necessity of introducing one of large diameter before you can succeed in drawing it off.

I tapped a woman, in company with a surgeon in the city, and the sac in that instance contained a fluid like pus; the practitioner who was with me had found a similar discharge when he tapped her some months previously. This woman recovered; I have seen other cases of a similar description.

When you operate for ovarian dropsy, it is quite uncertain what kind of fluid you will find; sometimes the cyst is filled with a number of hydatids; you must not therefore be alarmed when you perform the operation of paracentesis for the relief of this complaint, if a fluid should escape different from what you expected.

Now, gentlemen, the cyst in which the water of ovarian dropsy is contained is of two species—one is formed of the membrane which covers the ovary, and the other from an hydatid which lodges upon that membrane, the ovary itself being quite unaffected.

Here, gentlemen (exhibiting the preparation to the class), is a specimen of dropsy of one of the fallopian tubes; both extremities having been closed, water collected between them, and thus the disease was produced.

TREATMENT OF THE OVARIAN DROPSY.

I do not believe that medical treatment has any influence in this complaint; that is, I do not consider that medicines will produce any marked difference in the quantity of fluid contained in the cyst of the ovarian dropsy. Different practitioners, however, entertain different opinions on this subject; but, gentlemen, I feel it my duty to state, candidly and openly to you, the result of my own experience.

You may, if you think proper, give digitalis and mercury; they are strongly recommended.—I will mention to you a case which will illustrate the influence, or rather the want of influence of mercury, in ovarian dropsy:—Dr. Baillie and myself once met in consultation on the case of a lady who had for some time been afflicted with ovarian dropsy, and who had taken such quantities of mercury as to occasion a sloughing of the gums, the insides of the cheeks; and to excite so great a degree of adhesive inflammation, as caused her lower jaw to become fixed, and she was under the necessity of sucking her nutriment between the teeth; this proved what power mercury had over the disease. At this consultation I mentioned to Dr. Baillie my astonishment, that after so many cases of a similar description as the one we were then seeing, that practitioners should persist in asserting that mercury would produce an absorption of the water of ovarian dropsy. I asked Dr. Baillie if he had ever seen any benefit result from the employment of medicine in this complaint; and with that candour which is the strongest proof of an honourable mind, he answered, "Not in my life-time."

I do not wish, gentlemen, to deter you from the trial of medicine; but I am fully satisfied, after you have done so, you will agree with me that it does not possess the least power of occasioning a diminution of the water of encysted dropsy, and the reason of its being thus powerless is the deficiency of absorbents attached to the cyst; if you were to see a cyst injected for the purpose of exhibiting the absorbents, you would at once see the insuperable difficulty which is opposed to the successful medical treatment of this complaint. Now if the cyst should burst, and the water escape into the cavity of the abdomen, you know, in some instances, that in three days it has been absorbed, and passed away by urine and by the intestines. Again, in ascites, we know that elaterium has, in a very short time, produced a complete absorption of the water, but in ovarian dropsy no such effect has ever been known. Who would

have supposed, upon looking at the peritoneum, that it was a better absorbent surface than the ovarian cyst; and who would have imagined that squills, digitalis, or elaterium, would have had a greater effect upon one than upon the other; yet the fact is well known, and the cause of it clearly ascertained by anatomical inquiry; on one are found absorbents thickly distributed, while on the other they are scarcely perceptible.

When a person consults you, having ovarian dropsy, you should direct a belt to be applied tightly round the abdomen, for the purpose of producing such a degree of pressure as will diminish the tendency to enlargement; for if a person leads a sedentary life, and does not employ pressure, you will soon find that the dropsy will so increase as to require an operation; whereas if the belt be worn, tapping may be put off almost to an indefinite period.

Whether medicines are taken or not with a view of promoting the absorption of the water, I would advise you at least to attend to the fecal discharges.

The operation of tapping has occasionally been performed with a view of merely relieving the load under which the patient has suffered, when, to the surprise of the practitioner, it has ended in a perfect cure; but, generally speaking, the vessels more commonly have a disposition to renew the secretion of fluid, and the disease again forms.

When about to perform the operation for ovarian dropsy, take care that you may not be misled, and perform your operation on a person in a state of pregnancy. I have known several instances of this kind occur; it is a very awkward accident, would injure your reputation, and you should always, therefore, previously make yourself acquainted with the state of the parts, by an examination *per vaginam*. By neglecting this precaution, difficulties and accidents connected with the operation often arise. A gentleman from my native county was dining with me one day, and in the course of conversation, asked me if I had ever performed the operation of *dry tapping*? "Good God! no (I replied), and hope I never shall." "Well, (said he), it is an operation that I have seen, at all events; and I'll relate to you the particulars. A practitioner in the town where I resided called upon the surgeon with whom I was a pupil, and told me and a fellow-student that he was going to perform the operation of tapping for ovarian dropsy, and if we chose we might go and see it; we thanked him, and attended.

"The woman was seated on a stool, with her abdomen exposed, and the surgeon plunged in the trocar and canula, when, upon holding up a basin, and withdrawing the former, the doctor looked somewhat amazed at finding that no water escaped, and after crying 'hum,' and

deliberating for a second or two, he withdrew the canula, refixed the trocar in it, stepped back a pace or two, pointed it towards the abdomen, and again charged it as with a bayonet. *(Much laughter)*. The trocar was then withdrawn from the canula as before, but still no water! At this he uttered 'oh!' instead of 'hum,'—paused, withdrew the canula—turned to the persons present, and said, 'Gentlemen—this is an operation which you have probably never seen before—it is that of *dry tapping;*' and then to the attendant, 'Nurse, you may do her up.' *(Excessive laughter)*.—'Faith,' said the gentleman who told me the story, 'we thought he had done her up.'"

A question has often been started by medical men, whether the operation should be performed early or late, and in reply, I say, never early; at this time the cyst does not adhere to the peritoneum; consequently, instead of your drawing the water off, it will escape into the cavity of the abdomen. I knew an instance where a young woman was operated upon in whom the cyst was very small; while the water was passing off, it suddenly stopped, upon which the surgeon introduced a probe; and upon withdrawing the probe, something came away with it, which, upon examination, was found to be omentum. After the operation, peritoneal inflammation came on, and the young woman died. Never operate, then, until the tumour has become fixed, and which fact you can ascertain by carefully watching it in different positions of the body. But there is another reason why the operation should not be performed in the commencement of the disease, which is, the cyst at that period consists of different compartments, divided by septa; as the disease advances, and as the cyst becomes larger, these septa are broken, and the whole of the interior forms one cavity. Now, if you were to operate before this had been effected, the end of the canula communicating only with one part of the cyst, would merely draw the water from thence, without abstracting it from other parts, and consequently, the relief to the patient would be exceedingly partial.

It has been proposed, after evacuating the water from ovarian cysts, to inject them in the same manner as we do the tunica vaginalis for the radical cure of hydrocele. The experiment was tried more than a hundred years since by a practitioner in Cornwall; in the first case it completely succeeded, but, with a candour which did him infinite credit, he acknowledged that in two subsequent instances it proved unsuccessful. Probably it has not been sufficiently tried, and, for my own part, I think the subject is really deserving consideration. The stimulant employed should be mild, and must not approach the strength of the injections used for hydrocele, composed as they are of a drachm of sulphate of zinc to a pint of water, or equal parts of wine and water.

It is an operation which should rather be performed at the solicitation of the patient than at your own recommendation. It has been proposed to take away the cyst, and this I really think may be accomplished—at least small cysts; but large cysts, I feel confident, cannot be thus removed. A gentleman, whom you all respect very much, tried the experiment; after having made the opening through the muscles of the abdomen, upon introducing his finger it was found that the sac so firmly adhered to the abdominal parietes, that it was impossible to carry the operation into effect.

LECTURE XLVII.

ON PARACENTESIS ABDOMINIS.

In the last lecture, gentlemen, I spoke of the operation for the relief of dropsy of the abdomen, whether ascites or encysted dropsy: and in doing so I recommended you not to attempt to perform the operation without distinctly ascertaining a fluctuation, as you might otherwise endanger the abdominal viscera. The operation itself is very simple; the instruments which you use for this purpose are either the trocar and canula, or the lancet and canula. If it be ascites, the lancet and canula will answer equally well with the trocar and canula, as the fluctuation is very distinct, and there is but little to penetrate; the lancet is indeed preferable in this case, as its use is attended with less risk to the abdominal viscera. The canula which you employ for this purpose should be about three inches long, and made at the extremity like a common catheter rounded at the end, and having holes at its sides, but quite straight. You make an incision of about half an inch in length, and then thrusting the canula into the abdomen, the water is removed without danger. On removing the water in ascites, the patient is sometimes seized with spasms in the diaphragm, towards the close of its evacuation, as the diaphragm loses the support of the water. A man who underwent the operation in this hospital had violent spasms towards the close of the evacuation of the water, and in three days after died. On examining the body after death, it was found that the sharp edge of the canula had lacerated the anterior portion of the mesentery. On this account I now use a canula rounded at the edge, instead of the sharp-edged canula. The operation is extremely easy of performance; I have not the instruments with me at present, but I will shew you the mode of performing it in the next lecture. The thickness of the cyst in encysted dropsy is sometimes so great as to render it necessary to use a longer trocar than usual. A case of this kind occurred to me, in which, after having penetrated the abdomen, as I thought, on withdrawing the

trocar no water followed. I thought at first that I myself had met with a case of dry tapping, but on employing a trocar considerably longer than the former, about three inches and a half in length, the water followed immediately.

The operation of paracentesis used to be performed midway between the umbilicus and the spinous process of the ilium, but this practice has been abandoned for a number of years; the surgeon who first made the alteration was Mr. Cline, senior. He was performing the operation for paracentesis in this hospital during the time I was an apprentice; when he had introduced the trocar and canula at this part, he found that a quantity of blood, which appeared to be arterial, issued with the first water. The water became more and more discoloured, and towards the conclusion of the operation little else but arterial blood flowed. Mr. Cline shut up the wound without concluding the operation, in the hope that pressure on the abdomen would put a stop to the bleeding, but the man became extremely faint, and died in a few hours after the operation. On examining the body after death, it was found that the trocar had passed through the epigastric artery, that artery being exposed, in consequence of the rectus being thrown very much on one side in dropsy by the pressure of the abdominal muscles. It occurred to Mr. Cline that many persons had died of hemorrhage after the operation for paracentesis, and Dr. Carmichael Smith made at that time a calculation of the number of cases of this kind which had proved fatal. Mr. Cline, consequently, ever after, in his lectures, advised the opening to be made an inch below the umbilicus, where there is no vessel of any size, and no danger in performing the operation. It is right that the bladder should be emptied before the operation; you should direct the patient to make water, or if there should be any difficulty, draw it off by a catheter. Mr. Cline was called to a lady for a complaint which was thought to be dropsy of the abdomen, and which he at first conceived to be so himself. On examination, however, he observed that the upper part of the abdomen was more free from fluctuation than the lower, and it occurred to him that there might be some deception in the appearances, on account of the distended state of the bladder. He asked the lady whether she made water freely; she replied in the affirmative. He was not satisfied, however, and upon introducing a catheter, he drew off an enormous quantity of water, which had occasioned the appearance of a dropsy of the abdomen. A surgeon less cautious and intelligent than Mr. Cline might, under such circumstances, have tapped the belly at a part where there might have been considerable danger of wounding some of the abdominal viscera. The patient may either be placed in a chair during the operation, or may remain in the recumbent posture in bed, while

the water is drawn off. The latter position is preferable, because it prevents the fainting and spasms which often arise, when the stomach and diaphragm suddenly lose the support of the water. You should direct the patient to turn his body over in the bed, and you may then perform the operation with the greatest possible ease. There is no necessity for a bandage on the upper part of the abdomen; pressure on the sides will be sufficient for the purpose of evacuating the water. If you open the skin a little with a lancet, the trocar will enter with more ease; you might, indeed, divide the linea alba with the lancet, but this is not necessary. The usual mode of performing the operation, is to place the patient in a high chair, with a pail or tub between his knees, the surgeon sitting in a higher chair. A sheet is crossed round the abdomen, the ends of which are held by an assistant, who presses the sheet tightly on the abdomen. The surgeon makes a small incision with the lancet and introduces the trocar through the linea alba, into the part of the cyst or peritoneum only, according as it is ascites or dropsy. The water should be completely evacuated; if any portion is suffered to remain, it will form the nidus, if I may be allowed the expression, for a future accumulation of water. It has been recommended by a respectable surgeon of Chichester, to leave the canula in the wound, for the purpose of exciting such a degree of irritation in the peritoneum as may prevent the future accumulation of water. Experience will not at present justify me in advising you to adopt this practice; it has been tried by a person in this town, and such irritation produced by it as led to severe inflammation of the peritoneum; and, subsequently, destruction of life. I should observe, however, that in cases where this disease has not been re-produced, marks of inflammation in the abdomen have been felt by the patient, for two or three days after the operation. In general the water re accumulates very shortly after the operation. Persons are said to have undergone the operation for encysted dropsy of the abdomen more than one hundred times: I have never met with such a case in my own practice, but there is a tomb-stone in a church-yard at Dartford, in Kent, on which it is stated that the lady buried under it underwent the operation more than one hundred times. It sometimes happens that ovarian dropsy ceases to be re-produced, after the operation has been repeatedly performed. This happened in a lady who had undergone the operation two or three times in the year, for upwards of twenty years. In general, the disease returns after the operation; there are very few examples to the contrary. I have known but three cases of encysted dropsy of the abdomen, in which the disease has not returned; one in a young lady of seventeen, another in a medical man, under twenty, and another in a boy, who had an enlargement of the

mesenteric glands, followed by ascites. The ovarium sometimes suppurates after the operation, and this suppuration proves destructive to life; the quantity of matter secreted in these cases is enormous. On the other hand, I have known ovarian dropsy spontaneously cured. The wife of a veterinary surgeon had a dropsy of the ovaries spontaneously cured by the adhesion of the ovaries to the umbilicus. Ulceration was produced, and the fluid contained in the cyst gradually discharged. I have known the ovarium glued to one of the intestines, and fluid discharged in a similar manner. In one of the cases to which I allude, there is still some discharge of fluid; though for a length of time the symptoms of dropsy entirely ceased. A patient, after undergoing the operation for this disease, will ask you whether she should drink very little. In general we answer, that the patient should drink as little as possible; but it is doubtful whether the disposition to a return of the disease is much altered by abstinence from drink. I once recommended the wife of a coachman, after the operation for encysted dropsy, to drink as little as possible, and to allay her thirst by sucking the juice of oranges. She followed this plan, but was, very soon after, again the subject of the operation for ovarian dropsy. I then recommended her to drink as she pleased: she returned to her favourite beverage, porter, and the cyst did not fill nearly so fast as before. This may be in some degree accounted for, as she made very little urine while she sucked oranges, but passed a great deal when she returned to her ordinary beverage. It would appear that the quantity of fluid taken makes no difference as to the return of the disease, as it passes off by the kidneys: I do not mean, however, to build any theory upon a single case.

ACCUMULATION OF FLUID IN THE CHEST.

An operation is occasionally, but very rarely, performed for this disease. I will state to you all I have been able to learn on this subject. In the first place I have never known a case in which water had collected in the cavity of the chest, in which the operation of paracentesis of the thorax has been performed, where the patients have not died. This is not surprising, because hydrothorax is the result of the disease of the thoracic viscera, disease of the lungs or heart, and the cause remains though the effect is removed. Paracentesis of the thorax, however, is not unsuccessful, when matter has accumulated in the chest. Matter is sometimes confined in the chest by adhesion, producing spurious empyema, and sometimes it is diffused through the whole cavity of the pleura on one side. The marks of accumulation of matter in the chest are, considerable pain in the side, severe fever, and constitutional irritation; cough, with diffi-

culty of breathing, inability to lie, except on the side on which the matter is accumulating; and lastly, which you would not expect, considerable enlargement of the chest on that side. The reason of this difference in the size of the chest on the side affected is, that the accumulation of fluid prevents expiration on that side, and the ribs are unable to descend. There are other means of ascertaining the presence of fluid in the chest, to which I need hardly allude, as you have, no doubt, seen the instrument, (the stethoscope) used by a physician in this hospital. I have not had sufficient experience of this instrument to say decidedly how far it is available for this purpose. When matter has accumulated in the chest, the patient may be relieved by the following operation:—You draw the skin as much as possible upwards, and cut down with your scalpel on the upper edge of the eighth or ninth rib. Having cut through the intercostal muscles by this incision, without introducing the knife through the pleura, you pass the canula through the pleura, and it enters the chest. The matter escapes as soon as you withdraw the trocar, and after which draw the skin down: the wound closes without danger of any further inflammation beyond the adhesive. (The learned professor proceeded to shew the mode of performing this operation on the dead subject.) By this operation I have known several lives preserved. Mr. Bryant, a brother of the surgeon of that name, recovered after the operation, which was performed by Sir B. Harwood, the late professor of anatomy at Cambridge. The two following cases of empyema have occurred in my practice:—I was called by Mr. M., a surgeon at Cheltenham, to see a young lady who had a considerable swelling of the abdomen in the region of the spleen. There was an enlargement of the left side, accompanied with difficulty of breathing, cough, and that constitutional irritation which is commonly called hectic fever. On examining this case, I said that I thought there was fluid, and on laying the chest bare, there seemed to be a fulness between the third and fourth rib, a little above the nipple. Upon pressing the swelling in the abdomen, and putting my finger on the intercostal muscles, the fluid undulated between one point and the other. I said there was a collection of matter in the left pleura, and, on making a small incision with the point of the lancet, a gush of matter came from the chest. On putting my hand on the abdomen, I increased the flow most abundantly, and I then understood, what I did not before perfectly understand, that the diaphragm was pushed down by the pressure of matter from above, and that pressure upwards upon the diaphragm assisted in emptying the chest. I did not empty the chest entirely on that day, but putting a bit of adhesive plaster on it, I said I would empty it a little more the next, and I proceeded in this way to

discharge the matter gradually from day to day. This young lady is now in perfect health. In the last year, I saw a young lady who had a similar enlargement of the side, attended with similar symptoms. I treated this case nearly the same, but I found a great advantage in fixing a girdle round the abdomen, which prevented the diaphragm from again descending by any accumulation of matter. With respect to spurious empyema, it is merely a common abscess, which must be opened. and treated in the ordinary way. I have only one observation to make with respect to spurious empyema. A boy, who had been a long time at sea, and who was the subject of sea-scurvy, came to England with a swelling in his left side. I had no doubt, from its undulation during coughing, that there was matter contained in the cavity of the chest, and I was going to insert my lancet, when I observed that the boy appeared to be in very bad health. I inquired more particularly as to his symptoms, and it appeared that he had petechiæ, and that his gums occasionally bled. I gave him bark with citric acid, and, as his health improved under this treatment, the matter was absorbed, and the swelling entirely disappeared.

The next subject of this evening's lecture is one which some of you may think scarcely worth your attention, and with the treatment of which you may imagine that you are fully acquainted; the complaint to which I allude is

FISTULA IN ANO.

This is a disease in which you will be called upon to operate more frequently, perhaps, than in any other. I do not think it a disease which is very easy to treat; it very often baffles the skill of the best surgeons. A fistula in ano will hardly ever heal of itself, after the operation is performed, without the utmost attention on the part of the surgeon. The sphincter ani is the source of the difficulty in this complaint; every time the patient has an evacuation, the contraction of the sphincter ani separates one side of the abscess from the other, and thus the process of adhesion and inosculation of the granulations is continually interrupted. Understanding this, you will see that the principle of treatment consists in the division of the sphincter ani; if you do not divide the sphincter, you had better not attempt to treat the patient at all.

Fistula in ano is more painful than a common abscess; the patient has excruciating pain in the evacuation of his fæces, dreadful tenesmus, and very often retention of urine, the pressure of the matter preventing the passage of the urine through the urethra. The causes of this disease are various; it sometimes arises from a costive state of body; frequently from the pressure of hardened fæces passing through the intestines. It sometimes arises from absolutely opposite causes; thus, fis-

tula in ano is frequently the consequence of long-continued diarrhœa, producing irritation in the mucous membrane, which extends to the cellular tissue. It is often the result of some distant complaint; as disease of the liver, or derangement of the alimentary canal, producing an accumulation of blood in the mesenteric vessels, and a congestion which is determined to the anus. Persons who lead a sedentary life, take little exercise, and feed highly, are particularly subject to this disease. It is often the result of disease of the chest, and very commonly occurs at the close of phthisis pulmonalis. It is necessary, therefore, to inquire whether the patient labours under cough, dyspnœa, and whether his constitution is greatly impaired. No operation will avail without attention to the state of distant parts, and this is the reason why surgeons have so often lost their reputation by performing an operation for this complaint at an improper time. You may divide the sinus, but if the fistula depends on a disordered state of distant parts, the fistula will never heal without attention to the constitution of the patient. There is considerable variety in the size and complication of fistulæ; here is a preparation in which the sinus is confined to one side of the gut; there is another in which the gut is half surrounded, and another in which the disease completely encircles the intestine. When there is an opening on each side, it is best to perform the operation first on one side, and then on the other. Here is a preparation taken from a patient who died of this disease, which very rarely happens; the intestines and bladder are surrounded by the fistula; the rectum also is surrounded by sinuses, very high up. The fistula passed to the groin, and there discharged itself; this is the most complicated case of fistula I have ever seen. The fistula sometimes extends to the nates, and burrows to a great distance behind the glutei muscles. Fistulæ are called blind when the matter has made its way into the rectum, without making an opening externally; they are extremely difficult to treat. The medical treatment of fistulæ in ano will depend on their cause; if they arise from costiveness, I need not point out to you the remedies to which you should have recourse; if from disease of the liver, give calomel and saline purges; if they arise from disease of the chest, as hydrothorax, I scarcely know what medicine to recommend; these diseases almost always prove destructive to life. It is of great importance to give such medicines as will bring the fistula into a healthy state. With this view the balsam of copaiba may be given with advantage; if there is much irritation, give soda, which has great efficacy in diminishing the irritability of the rectum. Aromatic medicines should be given; especially the medicine which used to be called Ward's paste, which has been very properly introduced in the last edition of the London Pharmaco-

pœia, having been found by experience to produce excellent effects in this disease. The composition of this paste is as follows :—

Of Pepper, two drachms,

Of Elicampane, and Fennel Seeds, each half an ounce.

This is to be mixed up with honey, so as to form an electuary; and a tea-spoonful of it to be taken two or three times a-day. This medicine, in a very short time, brings the fistula into a healing state; healthy granulations arise from the surface, and the discharge, instead of being serous or bloody, consists of good pus. Submuriate of mercury, with saline purges, should be occasionally given during the use of these aromatic confections, with a view of promoting the secretion of the liver and intestines. The operation of dividing the sphincter ani, is simple in proportion as you find a ready opening into the rectum. You introduce a small probe-pointed bistoury into the fistula, pass your finger up the rectum to meet the instrument, and carrying the point downwards, divide the intervening parts. If the fistula is very extensive, you will be under the necessity of putting your finger on the extremity of the instrument, drawing the knife downwards. If the fistula does not open into the rectum, you must pass the instrument up the sinus till it reaches the extremity; put your finger into the rectum to meet the knife, place it along the end of the knife, and move the rectum for some little time with your finger nail, and then, cutting through the cellular tissue, bring the point of the instrument into the rectum. Mr. Savigny invented for this purpose a knife with two blades, one pointed, the other round; the pointed knife sliding on the side of a probe bistoury. The objection to this instrument, however, is, that it occupies too much space; so that a small sinus will not receive it. A very copious hemorrhage generally follows the division of the intestine; you must not, therefore, leave your patient, but endeavour to stop the hemorrhage by introducing a portion of lint into the wound. No union of the sphincter ani will take place, until granulations have arisen at the parts of the wound most distant from the rectum. You should not change the lint for several days, but apply poultices, and merely introduce a probe from day to day, to see that there is no improper adhesion. If you were to put fresh lint immediately, it would excite inflammation, and produce fresh abscesses in the surrounding cellular tissue. On the fourth or fifth day you may insert a small quantity of fresh lint: healthy granulations will arise in about a fortnight, under the treatment which I have already pointed out to you; you may then apply lint dipped in a solution of the sulphate of copper.

The sore will often assume an indolent state, when you think it is on the point of healing. Injections are sometimes successfully employed

for the purpose of healing fistulæ in ano. A gentleman came to me with a very deep fistula in ano; he had been operated upon before, when a very alarming hemorrhage followed the division of the sphincter; the sinus was so deep, that it completely absorbed the probe: under these circumstances, I was unwilling to perform the operation, except by gradually dividing the fistula an inch or two at a time. However. I told him that injections now and then succeeded, and I recommended him, therefore, to try the effect of an injection of port wine and water. A few days after, he injected port wine alone into the sinus, and the result was, that there was no further suppuration, but adhesion took place, as in the case of hydrocele. His cure was thus completed without an operation. Fistulæ are sometimes cured by the introduction of a ligature, which gradually cuts through the part. A thread is passed through the sinus, brought out by the rectum, and tied very tightly. Many persons will not submit to the operation of being cut for fistula, but prefer enduring pain much greater than any occasioned by the operation. In such cases the introduction of a ligature will sometimes prove successful.

LECTURE XLVIII.

In this evening's lecture I shall show you the operation of castration, first describing to you the diseases of the testicle which occasionally render such an operation necessary. The first disease of the testicle which I shall describe to you, is that in which hydatids or cysts are formed within it. This is a disease of no very unfrequent occurrence, and it affects the young rather than those who are advanced in years. It begins at the extremity of the epidydimis where it joins the testicle: there is an enlargement of the part which extends through the epidydimis towards the vas deferens, and from the epidydimis to the body of the testicle. The disease is never attended with pain, unless it acquires a very considerable magnitude. The spermatic cord is a little varicose, but not hard; the spermatic veins are larger than usual. There is very little inflammatory tendency, and the patient can bear the part to be roughly handled without pain. At the first glance the disease bears very much the appearance of hydrocele. There is very little difference in the state of the spermatic cord, except that it is somewhat more vascular than usual. The disease is confined to the testicle and epidydimis, and there is no instance of its having extended to the spermatic cord or any other part of the body. It generally attacks young persons between the age of seventeen and thirty; the most advanced

period of life at which I have seen it is thirty-eight. It attacks persons therefore at that period of life at which they are most anxious that these parts should be perfectly free from disorder. The nature of this disease, as it appears on dissection, is strikingly illustrated in a beautiful preparation on the table; you will there see bags of various sizes formed in every part of the testicle; the smallest not larger than a pin's head, and the largest about the size of a marble. The cysts consist of cellular tissue, not of glandular structure; and the testicle is entirely obliterated, every portion of the seminiferous tubes being absorbed by pressure. A great number of hydatids contain water only; some, water tinged with yellow serum; and others, opaque mucus, which, when the cyst is opened, is found adhering to its inner side. The operation of castration is sometimes required for this disease on account of its magnitude; the patient being unable to conceal the disease, is incapable of going into society, and will frequently intreat that the operation may be performed. It is not on account of the pain that he suffers or any apprehensions that the surgeon need entertain, but on account of the inconvenience to which a patient is exposed, that the operation is usually performed. The constitution of the patient is entirely unaffected by the complaint: indeed I have generally seen it in patients enjoying the most vigorous health. A man, in every other respect in perfect health, will come up from the country to have the operation performed, and return immediately after it to his accustomed avocations. I am not aware of any instance in which, after the operation, the disease has returned, either in the spermatic cord or in the other testicle. The disease is entirely local and unattended with danger.

SCIRRHUS OF THE TESTICLE.

The next disease of the testicle to which I shall direct your attention is scirrhus, similar to that which attacks the breast. True scirrhus of the testicle is an extremely rare complaint, and I am afraid many testicles have been removed under the supposition of their being scirrhous, which might have been saved. I have seen but very few instances of true scirrhus. A truly scirrhous affection of the testicle begins in the body of it, with an extremely hard swelling, which may immediately inform the surgeon of the nature of the disease. It feels like a marble body lodged within the scrotum, and it is tuberculated on its surface. It sometimes begins in the centre of the testicle, and gradually extends until the whole is involved in the disease. The epidydimis next becomes the seat of the disease, that portion being first attacked which communicates with the vas deferens. The spermatic cord becomes enlarged, and tubercles of various sizes form upon it. After the spermatic

cord has become enlarged, a hard tumour forms beneath the emulgent artery, which may be felt through the abdominal parietes. In true scirrhus, the testicle does not become enlarged to any considerable size. After the swelling in the loins, the thigh becomes enlarged, and œdematous on the side of the disease, which arises from the obstruction to absorption; and the pressure on the veins may also have influence in producing this effect. In the former disease which I noticed, I observed that the general health of the patient was not affected; but this is not the case in scirrhus of the testicle. The countenance undergoes a remarkable change; it is yellow, and sunk, a fixed colour terminates abruptly in the cheek. When you walk through the wards, and observe a patient greatly emaciated with this fixed redness of the cheek, the rest of the face being extremely sallow, you may almost conclude, from these appearances, that he is labouring under some scirrhous or cancerous affection. This disease differs also very much from the last, in being attended with excruciating pain, which becomes more intolerable as the disease advances. It is generally from a year and a half to two years before the disease destroys the patient.—When you cut into a swelling arising from this cause, you will find it composed of a considerable number of lobes; and cartilaginous substances, and earthy matter, are frequently deposited in the testicle. [The learned professor exhibited a preparation illustrating these appearances]. Such is the character of true scirrhus; it attacks persons at an advanced period; in general between sixty and seventy years of age, seldom under fifty-five years. There is a preparation in which the tuberculated character of the disease is still more manifest than in the last. The operation for this disease is extremely unsuccessful, for it rarely happens that the disease does not return after the removal of the scirrhous testicle. This may arise in some measure from the late period at which patients usually apply for relief. If the spermatic cord has not become enlarged, you may, by giving the patient alterative medicines for a length of time, succeed sometimes in preventing the return of the disease after the operation: it is, however, an operation which is, in general, even less successful than that for scirrhous tubercles of the breast. I have never performed it after the spermatic cord has become enlarged, because I know that the disease will be sure to return. I was once going round the other hospital, when I pointed out a man who had scirrhus of the testicle, with an enlargement of the spermatic cord, and observed that this patient would probably die from the operation if it were performed, and that if he did not, the disease would certainly return. There were some foolish young men present, however, who thought the man might

be saved by the operation, and one more foolish than the rest took a lodging for the man at Blackheath, where he performed the operation, from which it is scarcely necessary to add, the man died. If it were not for the compassion which one feels for a patient under such circumstances, we might be induced to say, that such a result was a proper punishment for his presumption. Presumption, gentlemen, is the offspring of folly, the child of ignorance, and it commonly happens that a young man, who thinks himself an exceedingly clever fellow, is a particularly egregious blockhead. It was observed by one of the greatest philosophers of antiquity, at the close of a life devoted to the acquisition of knowledge—that all he knew was, that he knew nothing; and if we consider the amount of individual acquirement, as compared with the knowledge which is either unattainable, or which the human faculties have not yet reached, the observation of the philosopher is strictly true. A man of real ability, instead of pluming himself on the extent of his acquisitions, will, in proportion as he advances in life, lament that there is still so much of which he knows nothing. To return, however, from this digression, what I advise, gentlemen, is, that you should never perform the operation of castration, when you find the spermatic cord affected at the abdominal ring.

FUNGOID DISEASE OF THE TESTICLE.

This disease is much more common than the last; it begins, like the true scirrhus, in the body of the testicle:—but unlike that disease, it almost immediately affects the whole body of the testicle at its first commencement. In a very short time the epidydimis becomes affected; next the spermatic cord; and, in the course of a very few weeks, a tumour forms in the loins. The disease is at first unattended with pain; but, when the spermatic cord and the tumour in the loins become of great magnitude, the patient suffers considerably. In this respect it differs from true scirrhus, in which the swelling never attains any great size. The fungoid swelling of the testicle sometimes increases to the weight of several pounds; the appearance of the surface is somewhat livid; the spermatic cord is loaded with blood, and in some parts you may feel a fluctuation as if there were a cyst within it; it becomes covered with tubercles of considerable size. The tumour has a soft, pulpy feel, readily yielding to pressure; and on the first examination you might suppose the disease to be hydrocele. I have known it frequently punctured on the supposition of a fluid being contained in it, when nothing but a little blood has followed the operation. It may be distinguished from hydrocele in the following manner:—In the first place, it is flattened on the sides, and round on the fore part, whereas in

hydrocele it is pyriform; if you squeeze any part of the fungoid tumour, the patient will complain of the pain arising from the compression of the testicle, which he will not do in hydrocele, unless you squeeze the posterior part of it; the fungoid tumour rather yields to the pressure of the finger, than fluctuates from one side to the other, as in hydrocele; and, lastly, the great weight of the swelling when you lift up the sides, and the livid appearance of the scrotum, mark the malignant character of this disease.

The disease often occurs in young people at about the age of puberty: I have seen it, in one instance, in a child four years old; I showed you the other evening the testicle of this child, which was loaded with tubercles. The period of life at which it may be said usually to occur is between the age of seventeen and thirty-five. The disease is not confined to the testicle, but affects other parts of the body in a great variety of situations. It differs from scirrhus chiefly in the swelling being of a soft kind: indeed it has been termed soft cancer, for it is in many respects, though not precisely, of the same nature with scirrhus. If you take blood from a person under this disease, you will find it so attenuated, that it will hardly coagulate; and if you have an opportunity of seeing the adhesive process, you will find the inflammation scarcely supporting blood-vessels; what few vessels are pushed through the part assume the appearance of fungus. If you inject a fungoid testicle, you will find it in some parts vascular, while in others blood-vessels are not received. On dissecting it you will find a portion occupied by blood not very firmly coagulated, and a portion by adhesive matter poured out by inflammation which resembles brain in a putrid state; in a part of the swelling will be found cysts containing a serous fluid.

The scirrhous and fungoid tumours are the only malignant diseases to which the testicle is subject. The operation may be performed with a hope of success, if the patient be entirely free from other complaints, but in a great majority of the cases which I have seen, the disease has returned. Here is a preparation taken from a patient in whom the disease did not return: in this case the disease was in the earliest stage in which I have seen it. There are, in general, tubercles of a fungoid character in other parts of the body, which destroy, notwithstanding all that can be done by alterative medicines, after the operation. We may sometimes prevent the disposition to the formation of this diseaae by giving alterative medicines, but no medicine with which we are acquainted has any power over it when it is once formed. Do not, therefore, go over the same treatment which experience has shown to be ineffectual, but try, amidst the great variety of new powers with which the discoveries of modern chemists have furnished medicine, whether

some of these new substances may not have a specific effect in this disease. I do not mean to say, that by giving alterative medicines, so as to improve the general health, you may not prevent the disposition to the formation of the disease, but that scirrhous and fungoid diseases are specific actions, which, when they are once engendered in the constitution, we know of no medicine to counteract. He who says we do, is an empiric, and an impostor.

Having mentioned these two diseases, which are, in a great degree, uncontrollable by our profession, I will now call your attention to a complaint which is often mistaken for them, but which is extremely easy of cure—I mean a complaint which may be called chronic enlargement of the testicle. You may say the other diseases are chronic: true, they are chronic, but then they are specific diseases. The disease to which I now allude, I shall call simple chronic enlargement of the testicle. It often happens that a person consults a surgeon under the following circumstances: he comes to you with a considerable enlargement of his testicle, which feels extremely hard, and which you might suppose at once to be scirrhous. Upon your inquiring whether he has any other complaint, he will tell you that he has occasionally had symptoms of a syphilitic kind. Whether he has taken mercury? Oh, yes, he will say, a good deal, and probably that this disease began while he was taking mercury. Whether he has any disease in his urethra? he will perhaps say that he has some stricture, or he may say that he has no obstruction whatever. Having made these enquiries, and received such answers, you may say to the party, "follow my advice implicitly, sir, and I promise you that this enlargement of the testicle shall be removed, and in the course of a few weeks you will be quite well." He will be delighted at hearing this, or he may be disposed to doubt whether you will be able to succeed. You must, in the first place, strictly enjoin him to keep the recumbent posture: without a strict adherence to this, it will be impossible to effect his cure; it is absolutely essential to his recovery. You must apply leeches, and evaporating lotions to the part, and desire him to take three, or even five, grains of calomel with opium night and morning. If he does this the enlargement of the testicle will subside in the course of a few weeks. This disease is of a similar nature with that which attacks the eye, which has been called iritis, and requires the same mode of treatment. It occurs in constitutions which have been injured by intemperance and over-excitement; it will increase until the testicle is entirely destroyed, unless you prevent it by the means I have just pointed out to you. The patient will probably ask whether you mean to salivate him; tell him he must have his mouth well affected, so as to produce a consider-

able discharge of saliva, shewing that the mercury has acted on the constitution.

Apply leeches to the part occasionally, and evaporating lotions, as the liquor ammoniæ acetatis, and spirits of wine. Do not on any account attempt to introduce a bougie, even though the irritability of the urethra should be the source of the enlargement. The introduction of a bougie at first would only add to the irritability of the urethra: wait till you have altered the constitution by the means I have pointed out, and the swelling of the testicle is considerably reduced; and then, but not till then, you may resort to the use of the bougie with advantage. I will tell you a case which made a strong impression on my mind. An officer in the Peninsula had a chronic swelling of the testicle, for which he consulted surgeons, and he was at length told that there was no hope of a cure except by removal of the testicle. He submitted to the operation, and resumed his professional duties. Eight months after, the remaining testicle became enlarged; he was exceedingly alarmed: surrendered his situation, and came to this country for advice. He applied to myself and two other surgeons; we had a consultation on his case, and our opinion was, that there was no necessity for removing the other testicle. All he was advised to do was, to keep his sofa steadily, to take mercury till his mouth became sore, and to apply stimulating lotions to the part. In five weeks the swelling subsided, and in six weeks this gentleman was perfectly well. This chronic enlargement of the testicle very rarely requires an operation, if treated in the way I have now stated. When I commenced my profession, I had no more idea but that the testicle required removal than any other surgeon at that time. I have seen a great number of them removed, and I confess that I have removed many myself: but if I were to do so now, I should be guilty of a great crime, for it is a disease which readily yields to the medical means which I have pointed out. There are several preparations on the table of testicles, taken from persons under this disease, before the efficacy of this treatment was ascertained; one of them, I am sorry to say, by myself. There is a species of chronic enlargement of the testicle, however, which requires the operation, as large abscesses are sometimes produced by it, which occasion great pain, so that the patient himself becomes anxious for the removal of the testicle. Fungous granulations spring from the surface of these abscesses; they are not of the true malignant fungoid kind, but they resemble the granulations which spring through the dura mater, in consequence of injury to the brain. Even in this case, however, the granulations may be cut off from the surface, and the integuments brought together, so as frequently to render the removal of the testicle unnecessary.

Mr. Travers has cured a case or two of this kind by the pressure of adhesive plaster. I have seen cases cured by sprinkling powdered sulphate of copper, or nitrate of silver, on the part. The irritable testicle is a very formidable disease, and, as far as I know, has not been described in surgical books. This complaint generally resists all the means which may be employed to subdue it; and I have, in three instances, been under the necessity of removing the testicle. The part is so exceedingly tender, that the patient cannot bear to walk, as pressure of the testicle gives him excruciating pain. The moment you touch the part, the patient shrinks from you, and complains of dreadful pain, which will last for hours after. The pain passes up the spermatic cord to the loins, entering along the nerves of the thigh. It may be relieved for the moment by medical means, as by giving the blue pill with hyoscyamus, but it generally returns, and will continue for months, and even years. The patient lies on his sofa from morning to night, and is wholly unable to pursue any occupation. I once asked a medical man who was labouring under this complaint, whether he found it absolutely impossible to exert himself, and he told me he should have been extremely glad to join the regiment to which he was surgeon, but he found it utterly impossible. In three cases, as before stated, I have been under the necessity of removing the testicle for this disease. The first case was that of a gentleman who came from Charleston, in South Carolina, with this disease, to try the effect of a change of climate. The part was so excessively tender that he could not bear the slightest handling, and he even dreaded the slightest motion. He confined himself to his chamber for a considerable length of time; I tried a great variety of means, until I grew tired of him, for I confess, gentlemen, that, when a disease does not yield readily, I am apt to take French leave. *(A laugh.)* He applied to Mr. Abernethy, who attended him for a considerable time, and then to Mr. Pearson, who kept him also for a very great length of time. Being no better for the advice he had received, he came back to me again; I advised him to go to Margate, and try the use of the warm bath. His general health was improved by the sea-bathing, but he chose to come home in one of the Margate coaches, and the consequence was, that by the time he reached Blackheath, he was incapable of travelling any further. He was put to bed at an inn on Blackheath, where he remained a long time before he was able to proceed to London. He at length made up his mind to submit to the operation before returning to Charleston, and I removed the testicle. He soon recovered from the operation, and I have had the pleasure of hearing, that since his return to Charleston he has taken to

himself a wife, who has produced him several children. The second case was that of a gentleman who had been a long time the subject of the complaint, and who, after submitting to the operation, got perfectly well. The third case was that of the surgeon to whom I just alluded, and who insisted on the operation being performed. The degree of suffering to which a patient is exposed from an irritable state of the testicle can scarcely be conceived; it is for the most part unmanageable by medical treatment, but will, after a great length of time, sometimes wear itself out. Mr. Wardrop, a surgeon of Liverpool, once observed to me, in consulting upon a patient's case, that he had an idea of cutting down on the spermatic cord, and dividing the nerves which went to the testicle. Whether he ever put his idea in practice, I know not; it was at any rate ingenious, and showed his knowledge of anatomy.

THE OPERATION OF CASTRATION.

This is one of the most simple operations in surgery. You grasp the testicle in your left hand; begin your incision at the upper part of the abdominal ring, and extend it to the lower extremity of the testicle. You must not leave any part of the scrotum undivided, because if you make the opening by which you draw out the testicle from the upper part of the scrotum, a bag of matter will form at the lower part, which will prevent the healing of the wound. Lay bare the spermatic cord completely at the abdominal ring; and put a needle and ligature through it and the artery of the vas deferens. Some say this is a work of supererogation; but it is not so, because, if you omit it, it often happens that when you divide the cord, it is drawn within the abdominal ring by the action of the cremaster, and you cannot get at it without slitting up the abdomen. This once happened during the operation of castration, at which Mr. Cline, senior, was present. The surgeon had removed the testicle, and when he came to secure the vessels, the spermatic cord could not be found. Mr. Cline brought the spermatic artery into view, by slitting up the abdominal ring. Having divided the cord, you draw it towards you, and detach the cellular membrane behind it: in this consists the whole of this very easy operation. The spermatic artery, and the artery of the vas deferens are all that require to be secured in the cord; in the scrotum there are several which require to be secured. I shall in the next lecture proceed to the amputations.

LECTURE XLIX.

ON THE DIFFERENT AMPUTATIONS.

OPERATIONS are now much less frequently performed than they were in the days of our ancestors, owing to the great improvements which have taken place in surgical science. Many of the diseases which were formerly considered incurable can now be easily cured by modes of treatment corresponding with our increased pathological knowledge. Many accidents, for example, where the parts are much lacerated, and for which the ancients would have operated, we leave to nature, by whose influence the different reparative processes will be set in action, and the injured limb restored to health and utility. When amputation is necessary, nature will occasionally even perform this operation unassisted by art; in mortification of the feet it often happens that the leg will be amputated by nature as effectually as though it had been accomplished by the knife. At Guy's Hospital there is at the present moment a case of this description. You have seen, in the case which I allude to, first, a division of the skin—then the division of the muscles shorter than the skin, and lastly, the division of the bones; the fibula has already separated, and the exfoliation of the tibia is rapidly going on. Nature in this case if left to herself, would, without doubt, accomplish the amputation of the leg; but the safety of the man requires, I think, that the remainder of the bone should be divided by the saw, for if this be not done, the long continued excitement may wear out the powers of the constitution.

Diseased joints used very frequently to lead to the performance of amputation in young persons as well as in the old; but amputation is much less frequently performed at the present day, in consequence of such disease, than some years back; even diseases of the joints of the upper extremities of children give rise to amputation much less frequently than in the days of our forefathers, but in chronic diseases of the ankle and knee, amputation is still very commonly performed; there is, however, a marked distinction in these chronic enlargements; one variety may be called congenital, which exists from the birth of the child, and the other is from some debilitating cause which produces the complaint after birth; as the constitution, therefore, is radically weak or vitiated in the former of these affections, you cannot expect that such permanent benefit will result in that case, as in the latter, where the constitution becomes affected from some accidental circumstance.

With respect to diseases of the ankle and knee joints, amputation for such complaints will occasionally be necessary both of the leg and thigh;

indeed, chronic affections of the ankle and knee give rise to amputation as frequently as diseases in any part of the body. For compound fractures we seldom amputate directly; they are seldom so severe as to require immediate amputation, and it is not until gangrene or disease of the bone has taken place, that it is deemed necessary to amputate; compound fractures, however, from the superior manner in which they are now treated, do much better than formerly, and very severe injuries of this description will often terminate most favourably; therefore, upon the whole, amputations are much less frequently performed at the present epoch than in the days of our ancestors. Now, gentlemen, before you amputate, it is necessary that you should apply, in such situations where it can be accomplished, the tourniquet, an instrument which consists of a strong band, capable of completely surrounding the thigh, two brass bridges, a long screw, a pad, and two small rollers. The rollers are situated one at each end of the under bridge. The bridges lie in immediate contact with each other, the concave part of the upper bridge completely fitting the convex surface of the under. The pad is placed in the arch of the under bridge, and which pad is to be placed immediately upon the vessel whose circulation is to be stopped; after having thus applied the pad, you are to bring the band around the limb, and secure it tightly upon the upper bridge, then, turning the screw by which the two bridges are connected, you can produce upon the vessel any degree of pressure that may be required, for the screw separates one bridge from the other, thus raising the upper bridge, pressing upon the lower one, at the same time tightening the band, and forcing the pad upon the vessel, you effectually control the circulation of the blood in the limb to which the instrument is applied; this is the tourniquet at present in gener lause; another has lately been invented having small spikes at one extremity of the bridge, and these perforate the band after it has been tightly applied round the limb, when, upon turning the screw of this instrument, the same effect is produced as by the other.

The tourniquet, in operations where it can be used, will be found of very great service; I mean, will be of considerable utility to the operator in point of facilitating the operation, and at the same time rendering it more safe. As an auxiliary, however, its convenience will be much more felt in private than in hospital practice, for in the former there is commonly a deficiency of those able assistants, whom we so generally meet with in the latter, yet the tourniquet, when it can be applied, will more effectually control the circulation than pressure by the hand.

I will now show you where the tourniquet should be applied when we operate on the upper extremity: for example, if you amputate the arm above the elbow, it should be fixed as near as possible to the axilla,

this will afford you room for dissecting back the integuments, and, at the same time, will allow of the retraction of the muscles. If you amputate below the elbow, the instrument should be applied about the middle of the arm, and this is the best place for putting it, on account of the pressure acting more immediately upon the vessel in this situation than when applied higher up, for here nothing but integuments and cellular membrane at the inner edge of the biceps muscle covers the artery; therefore, if you operate below the elbow, let the tourniquet be applied on the middle of the arm; if above the elbow, not lower than one third of the length of the arm downwards.

When you amputate below the knee you should fix the instrument on the middle of the thigh, with the pad on the femoral artery, at the inner side of the sartorius muscle; if you amputate above the knee, you must then fix it one third the length of the limb downwards: the reason of your applying it so high up is, to allow of the retraction of the muscles, as I before stated to you with regard to the arm, but its necessity is much greater here, as I shall hereafter explain to you. Well, then, in amputation of the upper extremity the pad is placed at the inside of the biceps, and in amputation of the lower extremity, if below the knee, near the middle of the thigh, and at the inner edge of the sartorius muscle. The first amputations I shall show you will be those of the fingers; we now very rarely amputate at either the second or third joint of the finger, because we find that it is better to remove the entire finger, either at the first joint, or even at the metacarpal bone behind the first joint, than to leave a small portion of the finger before it, for the stump is found to be extremely inconvenient, and to interfere most unpleasantly with the motion of the remaining fingers; do not, therefore, amputate a finger at the second or third joint, unless you are particularly requested to do so by the patient himself; and as this request may be made, I will show you the mode of performing the operation.

AMPUTATION OF THE FINGER AT THE SECOND OR THIRD JOINT.

Having felt for the joint, you make a circular incision a little below it, through the integuments; this is the first step; you then make a cut through these at each side of the joints; you then turn up and back the flaps thus produced, when, upon dividing the ligament with the scalpel at one side of the joint, you immediately open it, carry the knife through and divide the ligament on the opposite side; in this way the finger may be removed; the flaps you see are now laid over the bone, and form a good stump. The French perform this operation

in a different mode, and in a way, I must say, not very anatomical, for you know the construction of the phalanges is such that the upper portion of the lower bone projects over the articulating surface of the upper; this happens both inside and outside the joint, so that if you attempt to cut directly into the joint, you cannot do so in those parts, for the point of your knife will rest upon the processes I have just mentioned to you; their mode is to bend the finger, and then make a cut into the joint behind the process, and this in a finger that is not diseased may be done; but, generally speaking, in diseased fingers the joints cannot be bent; it likewise often happens that the joints themselves are diseased, when, of course, flexion would be exceedingly difficult, if not impossible.

OF AMPUTATION OF THE FINGER AT THE FIRST JOINT.

Now, gentlemen, in this amputation, the finger is drawn aside; you then make an incision obliquely through the web situated between them, and carry your cut just beyond the knuckle; the knife is then carried through the joint from side to side, leaving a flap of integument sufficient to cover the end of the bone: to say the truth, this is not the best mode of amputating the finger; it is better to make your oblique cut through the web longer than I have just described to you, so as to carry it beyond the joint some way up the metacarpal bone; you make a similar incision on the other side of the joint, and having cleared the bone from its muscular and ligamentous attachments, you saw through the metacarpal bone itself.

The two fingers which were next the diseased one now approximate, and if kept in this situation until adhesion of the integuments has taken place, very little deformity of the hand will be produced: if, on the other hand, a portion of the finger be left projecting, the inconvenience of the stump will not only be felt in the motion of the fingers, but a disagreeable deformity be obvious to every spectator: in the operation I have just shewn you, neither one nor the other will exist, comparatively speaking; there cannot be, of course, any annoyance from a stump, and the deformity will be scarcely observable: well then, we seldom amputate the finger at the second or third joint, unless at the particular desire of the patient; neither do we recommend the operation at the first joint, but rather the one which I have just mentioned to you, viz. that of sawing through the metacarpal bone a little way above the knuckle.

The next operation that I shall describe to you is the

AMPUTATION OF THE METACARPAL BONE OF THE THUMB.

To accomplish this operation, you must begin your incision by cutting through the integuments at the inside of the thumb, nearly opposite the first joint; you carry this incision backwards to the union of the metacarpal with the carpal bones; this incision will form a flap, consisting of integuments and the abductor muscles, quite sufficient to cover the wound that will be occasioned by the operation. After having completed this flap, the knife is then to be passed backward from between the index finger and thumb as far as the trapezium, to which bone the head of the metacarpal bone is articulated; when you arrive at this position, you are to turn the knife so as to make its blade form a right angle with the incision just made; you are then to carry its edge through the joint, by which the ligaments will be divided, and the bone is thus removed: the flap, you observe, that I first left, and which is formed principally of the abductor pollicis and the integuments, is quite sufficient to cover the wound. The metacarpal bone of the little finger is removed by nearly a similar operation.

You begin your incision at the web between it and the ring finger; carry down to the articulation with the unciforme bone, pass it through the joint, and then let it terminate upon the outside of the metacarpal bone, opposite the part where you commenced your first incision; a flap will be thus formed of muscles and integuments, in the same way as the flap in the thumb operation; straps of adhesive plaster are to be employed for the purpose of keeping the edges of the wound in contact. The vessels required to be secured in the operations for the removal of the fingers, are the two digital arteries.

OF AMPUTATION OF THE FOOT AT THE TARSUS.

The operation for the removal of the toes is so similar to that of the fingers, that I do not consider it necessary to say much to you on that subject. One observation, however, I will make to you, which is, that a man who had been in the habit of removing fingers at the first joint, and who had never removed a toe, or seen one removed, if he were to conduct the operation in the same manner, as for the removal of a finger, would feel himself very much puzzled; that is, if he expected to find the first joint of the toes at the same distance from the web as in the fingers. You must, in the toe operation, carry down your incision between the web for at least an inch and a half, before you will be opposite to the joint: the other steps of the operation are the same as for the removal of a finger. A new operation has of late years been proposed for the amputation of the tarsus, by cutting through the joint, formed

by the astragalus and os scaphoides, and the os calcis, with the os cuboides. Having desired your assistant to draw up the integuments, you make an incision from the bottom of the foot on one side over the dorsum down to the bottom on the other side, leaving the integuments of the sole of the foot undivided. Before you make your first incision. you of course feel for, and correctly ascertain, the precise situation of the joint; after the first incision has been completed, you are to bend the fore part of the foot downwards, by which you stretch the ligaments covering the joint, and a slight touch of the knife will then enable the instrument readily to pass between the articulating surfaces of the astragalus and os scaphoides; then, by cutting still farther downwards. you divide the ligaments connecting the os calcis and os cuboides. You are now to place the blade of your knife horizontally, and cut along the bottom of the foot towards the toes, between the integuments and bones. until you have cut a proper distance for obtaining a sufficient quantity of integuments to form a flap for covering the end of the stump, which is then to be adjusted neatly over the wound, and confined in that situation by straps of adhesive plaster. I have tried this operation, and do not like it; the inflammation which generally results from it is exceedingly severe, and the suppuration very extensive; this may be accounted for from so large a portion of articulating surface being exposed by the operation. I am of opinion that it is much better to saw through the bones than to perform this operation; there will be much less inflammation, much less suppuration, much less risk to the patient, and at the same time a much greater chance that the integuments will unite by the adhesive process. I would, therefore, advise you, when it is practicable, rather to saw through the os naviculare and os cuboides than to entirely separate these bones at their articulating surfaces; independently of the advantages which I have already mentioned to you; the last operation would afford the patient a better bearing for the body than the former, as more of the foot will be left by it. Upon the whole, then, I am positive that you will find the operation of sawing through the bones more successful than that of removing the foot at the joint.

ON FLAP AMPUTATION OF THE LEG.

It is usually performed a little above the ankle joint, about two-thirds of the length of the leg downwards; it is performed with a view of enabling the person to wear an artificial leg; and in those individuals whose circumstances do not require them to obtain their food by manual labour, it may succeed, and answer the object in view; but for those persons who, by their industry and muscular exertions, have to obtain a livelihood, it does not succeed.

A man, a few years since, in Guy's Hospital, requested me to amputate his leg a little below the knee, whose foot had previously been removed a little above the ankle. As the stump was quite well, and the man appeared in health, I really did not think him serious; upon finding, however, that he was so, I persuaded him against the measure, and said to him, You had better

> "Bear those ills you have,
> Than fly to others that you know not of."

As he persisted, however, in requesting the operation might be performed, his wishes were at length gratified, and he had the satisfaction of showing to his friends his improved stump.

When the flap operation is to be performed, it should be done, as I before stated to you, two-thirds of the leg downwards; you push the catling through the integuments and muscles of the back of the leg at this part, and carry your incision downwards; when you consider the knife has passed sufficiently far, you are to make it cut its way out immediately at the back of the leg, and let the termination of the flap be of a semilunar shape; it will then correspond to the form of the wound, to which it will afterwards be applied, viz., the upper part of the stump. A circular incision is now to be made over the leg, so as to meet the incisions where the catling first penetrated, and you remove the limb by sawing through the bones.

In addition to the objections I have already mentioned, there are two others of very considerable importance: it does not heal near so well as the common amputation; from the constant re-action of the muscles of the calf, the flap becomes drawn from the surface of the bone which exposes it, and the stump usually ulcerates most extensively. We have never seen, in our hospitals, that this operation has succeeded so well as the one I shall presently mention to you, and, consequently, it has been abandoned. There is another objection that I will mention to you against its performance, which is, that if hemorrhage should occur when the ligatures come away, it will be almost impossible to get at the vessels so as to secure them; and this arises from their becoming so deeply imbedded in the soft parts. Altogether, therefore, it is an operation which it will be prudent in you to avoid performing.

Now, gentlemen, of

AMPUTATION OF THE LEG BELOW THE KNEE.

First let me mention a few rules for your guidance when you perform this operation. In amputation below the knee, if its condition will allow of it, the bone should be sawed through four inches below the

point of the patella; when you cut through the integuments, your incision should be made with a view of saving two inches of these for the purpose of covering the stump; the quantity, however, is to be regulated according to the size of the limb; and, in accidents where the parts have not been reduced by previous disease, four inches frequently will not be found too large a portion. Your principal object, gentlemen, should be to save integuments, and not muscle: to preserve muscle for the purpose of covering the stump in these amputations is an exceedingly false and injurious surgical principle; if you save muscle as well as integument, retraction will take place, and the stump, consequently, will not heal near so kindly as it would have done provided you had only preserved integument.

Now, gentlemen, in holding the amputation knife, do not grasp it thus with the entire hand, but take it rather between the finger and thumb, so that the haft may freely play in the hollow of the hand, and at the same time pass between the finger and thumb when the circular incision is made: by adopting this method, you may make your first cut in an easy and free manner, and obviate that stiffness which is sometimes observable even in experienced operators. I now hold the knife in the manner described, and thus divide the integuments; they have two places of adhesion, viz., over the tibia, and over the fibula. Having separated these and likewise the connecting cellular membrane, the skin is now loosened to the extent of two inches, which quantity will be quite sufficient to cover the stump. In amputating, I generally use but one knife, so that I shall divide the muscles, interosseal ligament, and periosteum, with the same instrument; I therefore commonly use, in amputating the leg or arm, the catling only. Take care to divide the muscles extremely well, so as to prevent any of the fibres being torn by the teeth of the saw; for they not only impede the action of the saw, but render the operation painful and clumsy. Much is said about the attention and ability of your assistant while amputating, and that it depends upon him whether the bone be splintered or not at the time it is sawn through, and likewise the hitching of the saw is attributed to his awkwardness. Now, the fact is, so much does not depend upon the assistant as has been asserted; the assistant should merely allow the limb to rest upon his hand; he should neither depress nor elevate, but quietly permit the position of the limb to be regulated by the operator, and carefully keep it in that situation; the hitching of the saw will then be prevented, and the operator himself may avoid splintering the bone by causing the oscillations of the saw to be short at the moment when the bone is nearly cut through. The vessels to be secured in this operation are the anterior and posterior tibial arteries, and some-

times the anterior and posterior interosseal; in tying the posterior tibial artery, take care not to include in the ligature the nerve which accompanies it. After having applied your ligatures, cut off one end of each, and let the remaining ends hang out together at the bottom of the stump; straps of adhesive plaster are then to be applied over the integuments, some longitudinally, and others perpendicularly, for the purpose of making it circular. These longitudinal and perpendicular straps should be secured in their situation by a strap applied over them, and around the limb, so as to retain the first straps that were applied in their proper situation. The cooler the stump is kept after the operation the better; there will be less danger from hemorrhage, and less chance of the suppurative inflammation taking place; the adhesive is what we want, and this you will be most likely to obtain by keeping the stump in as cool a state as possible; no rollers are applied to stumps by surgeons of the present day, no tow, no flannel caps, as there were formerly.

Now, as to the time for removing the dressings: On the sixth day you may take away one strap, for the purpose of permitting any pus that may have collected to escape; and on the eighth day you may remove the whole of the straps, substituting for each, as soon as taken off, a fresh strap of the same kind of plaster: it would be the height of impropriety to take off at the same time the whole of the plaster at so early a period, as it would probably destroy the whole of the adhesions which had formed; therefore, on the eighth day, when you remove each strap of plaster, put another in its place before you take off a second.

OF AMPUTATION OF THE THIGH.

To amputate above the knee requires but little art or anatomical knowledge; some degree of skill, however, must be practised in the operation, if the surgeon wishes to have a good stump after it; the whole art of the operation consists in making the incisions through the muscles in such a manner as to prevent the stump from becoming of a conical shape at a subsequent period. It is not always desirable to perform this operation very near the knee-joint; in fact, in many instances it is a great fault to do so, but more especially when the knee is affected with fungoid or scrofulous disease; and I will tell you why. Under the tendon of the rectus muscle, for an inch and a half at least above the patella, are situate a quantity of bursæ mucosæ, and if these be cut into under any circumstances, when amputating, it is bad enough, because, generally, most extensive suppuration will follow, which will protract most materially the healing of the stump, and if you operate in con-

sequence of a fungoid or scrofulous disease of the knee, and then should cut into bursæ, the chances are, that the disease would again return in that part, and render another operation necessary. In the operation above the knee, be careful not to make your circular incision through the integuments lower than an inch and a half above the patella.

Well, gentlemen, after having made the incision through the integuments, and dissected them back as far as may be thought necessary for the purpose of covering the stump, you are then to cut through the superficial set of muscles. In dividing these muscles is the grand circumstance to be attended to in this operation; and which circumstance is to divide the muscles immediately surrounding the bone at least two inches higher up than the spot at which you commenced your incision through the superficial set of muscles; this will prevent the formation of a conical stump. The reason is obvious; the external muscles being cut longer than the deep-seated, an allowance is made for their retracting; when, therefore, they are drawn up to their fullest extent, they are then of the same length as the deep-seated muscles, thus the end of the bone, and consequently the entire stump will present to you a flat surface. You will probably ask, why do not the deep-seated muscles retract too? The answer is, they cannot, from their intimate connexion with, and attachment to, the bone. The principle in this operation is to have the muscles the same length as the bone, without the necessity of applying the bandage.

In dressing this stump it is generally advisable to apply a roller next to the skin, in consequence of the spaces which exist between the muscles at the end of the stump; the ligaments are then to be placed at the most depending part, and straps of adhesive plaster put on in the same manner as for amputation below the knee.

In this operation it is generally necessary to tie three arteries—the femoral, the profunda, and that branch which usually runs either in or by the sciatic nerve, for the purpose of securing it, and the application of a ligature here requires considerable care, for the want of which I have in two instances known a ligature to have been put upon the sciatic nerve itself. In the first case it was not attended by any evil consequences; but, in the second, violent spasms came on in the part; they were afterwards diffused throughout the body, and ultimately proved destructive to life.

It should be equally your object to heal this stump by the adhesive process, as much as that of the leg; but in applying the strap of adhesive plaster, remember that if matter should form it will gravitate, and at

the lowest part of the stump, where the ligatures are hanging, you should leave a small aperture to permit its escape.

[The learned lecturer performed each operation upon the dead subject in the different modes described in the course of the lecture.]

LECTURE L.

AMPUTATION OF THE HAND AT THE WRIST JOINT.

This operation is not unfrequently required, in consequence of extensive laceration of the metacarpus. Before showing you this operation, however, let me observe, that if any one of the fingers or the thumb remain, it is better not to amputate the hand, as a single finger is often exceedingly useful after injuries of this kind. A boy in the other hospital recently lost his thumb and three of his fingers by an accident, but the fore finger remained uninjured: I amputated the other part of the hand, leaving the fore finger, and you will scarcely believe how useful he found this finger. It is a curious circumstance that it increased to a size very considerably larger than that which the finger of a boy usually acquires; you will see, from the cast which has been taken of it, that it is quite as large as an adult's. He used this remaining finger in grasping and lifting bodies with singular dexterity. If the second and third fingers be injured, their removal will leave the patient a portion of the hand almost as useful as before. I was called to a man at Vauxhall, who, in shooting, had a portion of the middle and ring fingers carried away. I took out both the metacarpal bones, and the remaining part of his hand was extremely useful to him. Be not in haste, therefore, in such cases, to remove the whole of the hand.

In performing the operation at the wrist, you are first to feel for the styloid process of the radius; it is better to make a semicircular incision on the back of the wrist, and a similar incision on the under side, so as to reach the styloid process of the radius, instead of making at once a circular incision. (It is of importance that sufficient integuments should be left to cover the joint completely); then depress the hand a little, and cut through the transverse ligament of the wrist. The operation is easily performed, and leaves a very neat stump. The radial and ulnar arteries are the only ones which, in general, require to be secured, the interrosseal not being of sufficient magnitude to require securing. In tying the ulnar artery, be upon your guard not to include the ulnar nerve, which is close to its side; the ulnar artery is close to the flexor carpi ulnaris, and the radial at the outer side of the flexor carpi radialis.

AMPUTATION OF THE FORE ARM.

The amputation of the fore arm a little above the wrist is a very dangerous operation; I have known two instances, in which the fore arm was amputated three or four inches above the wrist, which terminated fatally. The objection to this operation is, that you divide a great number of tendons situated in the fore arm, which suppurate after the operation, and form extensive abscesses, which burrow along the arm: tendons are exceedingly apt to slough, where matter has been produced, and in this way occasion the destruction of life. It may be said, that we also cut through some tendons in amputating at the wrist joint; this is true, but at the wrist joint they are so bound down by ligaments that they do not suppurate after the operation; there is skin enough to cover the extremity of the joint, which unites by the adhesive process. Such is the result of experience with respect to amputating in this part; if you are asked where you should amputate, you should answer at one-third of the length of the fore arm in tracing it downwards. In amputating the fore arm you may make a double flap; one on the inside, and the other on the outer side; and this mode of operating is often adopted. In sawing the bones, take care to saw both at the same time. A very good stump is left in this operation: four arteries require to be secured, the radial, the ulnar, and the anterior and posterior interrosseal.

The amputation of the upper arm is similar to the operation of amputation above the knee: in the latter, however, it is necessary to make three incisions, as I explained to you in the last lecture; in amputating above the elbow joint two circular incisions will be sufficient, one through the integuments, and a second through the muscles down to the bone: having well freed the bone from the muscle, you will proceed to divide it by the saw. The reason for this difference in operating is, that above the knee you require a considerable portion of integument to cover the stump; in the upper extremity the muscles are more bound down to the bone. In amputating above the elbow, the principal artery which requires to be secured, is the brachial; in securing it, take care not to include the brachial nerve.

AMPUTATION AT THE SHOULDER JOINT.

The amputation at the axilla is a very simple operation: I may add too that it is safe, for I do not think that this operation adds at all to the danger of the patient, when compared with the amputation of the upper extremity a little above the elbow. After amputation at the axilla, the joint heals as well and as quickly as after amputation at the

middle of the arm. The readiness with which it heals will depend upon the integuments being sufficient to cover the whole of the cartilaginous surface, and upon the constitution of the patient. If the constitution of the patient be not good, there will be danger of suppurative inflammation. The first case in which I performed amputation of the shoulder joint was that of a woman in the other hospital, for exostosis of the os humeri. To ascertain whether the swelling was of an ossific character, I made a small incision through the integuments, put down a probe, and felt the spiculæ of the bone giving way. It was of great importance to ascertain that the disease was not of a schirrous or fungoid kind, for in that case it would have been useless to amputate. It was necessary in this case to make a double flap, by taking out a portion of integument from the arm, as it was impossible to provide a sufficient covering for the glenoid cavity from the deltoid muscle. The second case in which I operated at the shoulder joint was a curious and a novel one. It was that of a boy residing at Worthing, who fell from a horse, and received a compound fracture at the elbow joint, which rendered amputation necessary. It was an admirable stump, and the wound healed quickly. In a short time, however, the boy began to complain of a great deal of pain at the extremity of the stump; a gradual alteration in its form took place, till it became conical, and at length the bone projected through it. The boy was brought to Guy's Hospital, and on examination there was found, at the extremity of the stump, a swelling on the inner side, which was so excessively tender that he could not bear the slightest pressure. The least pressure produced the most violent spasmodic affections of the muscles; these symptoms increased, the boy's general health gave way, and it became necessary to amputate the limb at the shoulder joint, when we found the nerves forming the axillary plexus blended together, and forming a large substance like a common ganglion. This had produced the tumour on the inner side of the arm, and the spasmodic affections of the muscles. Some time after a boy came into the other hospital who had had his limb amputated below the knee. The operation had been well performed by Sir Charles Blicke; a good stump was left, and the boy was discharged, as cured, from St. Bartholomew's hospital. Within a few months he came back, complaining of great irritation at the extremity of the stump, which had become conical; the extremity of the bone was sawed off, and he was discharged a second time, apparently doing well. Soon after, however, the bone became again conical, and extremely irritable; he was brought into the other hospital, where, believing that there might be a swelling at the extremity of the popliteal nerve, which produced effects similar to those in the

former case, I made an incision into the ham, sawed off the bone at the back part of the stump, and removed a portion of the nerve, which was swollen to the size of the extremity of the finger. Mr. H. Cline has since removed a similar ganglious substance in a person whose stump became conical, and extremely irritable. In all such cases it will be right to saw off the bone so as to lay bare the extremity of the nerve, and remove that portion which has become enlarged; above the knee the sciatic nerve will be affected; below the knee the posterior tibial. The French, in performing the operation of amputation at the shoulder joint, make a flap before and behind the joint; we do not do this, but I do not mean to say that their mode is not quite as good as ours. There is no necessity for the tourniquet in this operation; a finger may be put on the artery, while you are making the flap, but even this is unnecessary, for all that is required is to divide the artery last, and put your finger upon it at the moment of dividing it. Place the patient in a chair; slit up the deltoid muscle, and, introducing the knife, make a flap from the head of the os humeri; it is better not to make the other incision through the integuments, until you have dislocated the head of the bone from the socket. The next thing you have to do is to cut into the joint, dividing the capsular ligament; the head of the bone is easily dislocated from the socket. The next thing you have to do is to cut into the joint, dividing the capsular ligament; the head of the bone is easily dislocated from the socket. Carry the knife in a circular direction, and put your finger upon the artery while you are turning the head of the bone from the socket. The axillary artery is the only one which requires to be secured; I have never known a patient die from the operation of amputation at the shoulder joint; but I have heard of cases in which the patient has died of hemorrhage caused by sloughing of th artery some days after the amputation.

AMPUTATION AT THE HIP JOINT.

This operation has been several times performed, and in several instances with success. I recollect the time when this operation was a little criticised by surgeons, and I remember the following story being told of Mr. Bromfield, who performed it. Mr. Bromfield was attending a nobleman, who observed that his hands were a little bloody; this led to some conversation about our profession, and Mr. Bromfield said he had just been amputating a man's thigh at the hip joint.—"Good God! Mr. Bromfield (exclaimed the nobleman), how can you talk of such horrible things?" Three or four days after, the nobleman inquired about the patient who had undergone this operation, and Mr. Bromfield replied, that he had lived forty hours after it. "And was

that all (said the nobleman), after putting the man to such dreadful agony?" The amputation at the hip joint, however, gentlemen, has been so often performed with success, that it may now be considered as one of the established operations of surgery. Mr. Brownley, a military surgeon, first performed it during the late war: he did it without putting any ligature on the artery in the first instance; it was only compressed. Mr. Guthrie also performed this operation with success during the late war. He also performed the amputation through the trochanter major without securing the artery in the first instance; I compressed the artery myself in that case. The amputation at the hip joint has been performed in the same way successfully by M. Larrey, and many other surgeons; but notwithstanding the great respect I entertain for these authorities, I am disposed to think that the operation cannot be safely performed without securing the artery in the first instance. When you do not secure the artery in the first instance, what is likely to happen is this: when you have to divide the femoral artery as near to Poupart's ligament as possible, and put a ligature upon it, the man becomes so faint under the operation that he will be unable to support it. I have, in such a case, been obliged to suspend it, to give the patient wine, and chat with him, in order to rouse the vigour both of his body and mind. The operation will certainly be most safely performed by tying, in the first instance, the femoral artery under Poupart's ligament, above the origin of the arteria profunda. A question in the first place arises whether we should perform the operation of amputation at the hip joint, when it can be done through the trochanter major. I say, no. Unless the disease of the thigh-bone extends quite up to the joint, as in the case in which I recently performed the operation, it is undoubtedly better to saw through the trochanter major than to cut the bone from the acetabulum. When the acetabulum is laid open, great constitutional irritation is produced by the suppurative process—abscess after abscess arises, and the life of the patient is put into imminent danger. Though this operation has been occasionally performed with success, I feel it my duty to impress upon your minds most strongly the danger to which it exposes the patient; it occasions the most violent constitutional irritation, and reduces him to the lowest possible state, so that he can with difficulty recover; whereas the operation of amputation through the trochanter major is attended with very little risk. After the femoral artery is tied, there is no difficulty in the future steps of the operation; a doubt may arise whether the femoral artery is laid bare above or below Poupart's ligament; and to ascertain this, slit up the artery a little, to see whether the orifice of the profunda is above or below. As

you cannot form a very large flap on the outer side, the principal flap must be made from the inner side. Pass your knife above the trochanter major, along the muscles; and, having made your two flaps, the next point is to dislocate the head of the bone, which snaps as soon as the ligament is divided.

The French operate with a very long knife, nearly as long as a sword; they pass it down directly into the capsular ligament, until it touches the head of the bone, carry it through the round head of the bone, and, cutting through the muscles along the trochanter major, bring it out at the back of the thigh.

(The learned professor performed the amputation at the hip-joint, and the other amputations described in this Lecture, on the dead subject.)

LECTURE LI.

In adverting to the subject of complaints in the anus, I have already mentioned fistula in ano; I shall, in this evening's lecture proceed to the subject of

PILES.

Piles, which are complaints of very common occurrence, are, in the first instances, an enlargement of the hemorrhoidal veins; they are either external or internal, and the treatment will be somewhat different, according to the situation of the disease.

When a person applies to you with external piles, he complains of pain in passing his motions, and tenesmus after the discharge. On examination of the anus, you discover a projection of a livid appearance, which, in two or three days, becomes so solid as not to yield to pressure. The blood is coagulated in the hemorrhoidal veins; after a time, the veins become inflamed, the patient feels uneasiness in going to stool, and observes that his fæces are tinged with blood. In a short time the pressure of the fæces on the internal part of the rectum brings down the pile, so that it becomes external. The gut is brought down in this way every time the patient has a motion, and he is under the necessity of pressing upon the part for some time, in order to return the rectum into its original situation. This is a great tax on his time, as well as a cause of considerable suffering; the bleeding is at this time very considerable, and the discharge is attended with great irritability of the rectum.

At length inflammation takes place, which adds greatly to the patient's suffering, and he is often unable to return the rectum when it

has descended. A person is thus exposed to considerable inconvenience and suffering from this complaint, and he is very anxious, after a time, to have it removed.

Prolapsus ani is to be considered as the effect of internal piles. I knew a person, who held a situation which required his attendance in the early part of the day, who was under the necessity of rising at a very early hour, in order that he might have his evacuation, and have sufficient time to return the rectum. A piece of lint, dipped in oil, should be applied, when a considerable bleeding takes place from the pile or piles. There is sometimes a discharge of matter, and now and then the piles become ulcerated.

With respect to the causes of this complaint, it sometimes arises from costiveness, and the pressure of hardened fæces on the rectum; and is very often a consequence of long continued diarrhœa: so that, opposite causes occasionally produce the same effect. It very often arises from disease of the liver, and congestion of the veins in the intestinal canal. The difficulty of transmitting the blood through the vena portæ occasions a congestion in the hemorrhoidal veins; and obstructed secretions in the intestinal canal lead to the same effect. It is a very common consequence of phthisis pulmonalis; the subjects of that disease are very commonly, sooner or later, the subjects of internal piles, with prolapsus ani. When piles have existed for a considerable length of time, excrescences are produced, in consequence of inflammation.

There are three different states of the rectum under this disease; first, as it is affected by external piles; secondly, by internal piles, accompanied by prolapsus ani; and, thirdly, by excrescences, which are the remnants of the piles, and which possess a high degree of vascularity. The mode in which these excrescences are produced is as follow:—The inflammation of the pile glues the sides of the veins together: adhesive matter is poured out, which becomes organised, and a hard swelling, in which there is a number of vessels, is produced. These excrescences project from the surface a little way up the anus, which is chafed and rendered extremely irritable from this cause. Here are preparations in which you will have an opportunity of seeing them hanging in festoons several inches from the extremity of the anus.

With respect to the treatment of this disease, if you are consulted for external piles, and find a little vivid projection at the anus, which has existed only for a short time, and yields readily to pressure; you should give some active aperient, avoiding carefully, however, any purgative which has a particular influence on the rectum, as, for example, aloes. You should give castor oil, or sulphate of magnesia, with infusion of

senna, so as to produce a copious secretion from the intestines. Saline purges produce the greatest effect when you wish for a considerable secretion from the intestines; where you wish for a secretion of bile from the liver, give the submuriate of mercury, or the blue pill, with saline purgatives. In this way you relieve the veins of the intestinal tube, and remove congestion. In addition to this you will apply leeches to the swollen part; the best local application is the liquor plumbi subacetatis dilutus. In this way you will generally succeed in getting rid of the disease in this stage. If the pile has continued till it has become solid, you will then pursue a different plan. Put the point of your lancet into the pile, just puncturing the part, and squeezing it between your fingers, you will press out a clot of coagulated blood. When the pile has become diminished, and the vein ceases to be swollen, the liquor plumbi subacetatis dilutus, with a purgative, will get rid of the disease. So much for the treatment of external piles in their commencement; the treatment of internal piles is more difficult.

ON THE TREATMENT OF INTERNAL PILES.

It requires a great deal of experience in many cases to enable a surgeon to make up his mind as to the best treatment of particular diseases, and I will state to you the result of my experience on this subject. I am going to make some confessions, but I have not the slightest objection that they should be made known to the world, because they may prove useful to others.

Internal piles commence by a sense of weight and pain in the sacrum; you are seldom consulted, however, until the disease shows itself by prolapsus ani. As a prolapsus ani is entirely the effect of the piles, this effect will scarcely cease, unless the causes of it are removed. You may diminish it in some measure by astringent applications, and it is right to try to do so, but you will seldom ultimately succeed. With this view, when the part has descended, you may use a decoction of oak bark and alum, injecting into the rectum (with a common gonorrhœa syringe) two grains, which may be increased to four grains of alum in an ounce of the decoction of the oak bark. But this treatment will seldom avail when the disease has advanced to any considerable extent; the only way of effecting a cure, in such cases, will be to remove the

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a question which experience can alone solve. I used to think the removal of the piles by excision the best mode, because I found the pain produced by it very trifling, as compared with the ligature, and the prolapsus very easily cured in this way.

I remember a case of a major in the army, who had prolapsus from

internal piles, and who suffered so much when the piles were tied, that he could not submit to this operation: but upon cutting them off with a pair of scissors, the pain was so trifling, that he thought nothing of it.

If I had never met with any adverse circumstances, I should still recommend the removal by excision; but I must now state the reverses which have occurred to me in this mode of practice; these reverses I feel it my duty most candidly and openly to declare to you. A gentleman from the East Indies placed himself under my care with internal piles, which I removed with the scissors. A very few days after he complained of pain by the side of the rectum; an abscess formed under the gluteus muscle, which discharged abundantly; his constitution was already broken, and he died in consequence of the discharge. Considering this to be merely a case of bad constitution, which might not apply to any considerable number of cases, I did not give up a practice which I had hitherto found successful, in consequence of a circumstance which I regarded as accidental.

Five years ago a nobleman applied to me with internal piles. I was upon my guard in this case, and said I did not like to remove the piles without a consultation. A consultation was held, and the removal by excision was agreed to; I accordingly removed them, and he was well in a very few days. Two years after, he sent for me again, and said that he had some more of these piles with prolapsus ani, and that he wished me to cut them off again; I did so, and as I advised the recumbent posture, he went immediately to bed. As I was anxious about this patient, I did not immediately quit the room; but stood chatting with him for a short time, when he said, I believe you must quit the room, for I must have a motion I went out of the room, and upon returning shortly after I found him trying to get into bed, and upon looking into the vessel I perceived a considerable quantity of blood in it. In a few minutes after, he said he must have another motion, got out of bed, and again discharged a considerable quantity of blood. This he did four different times; one of the hemorrhoidal arteries in the centre of one of the piles which had been removed was divided, and as I was determined he should not die of hemorrhage, I said I must secure the vessel which bled, and with a speculum ani I opened the rectum sufficiently to see the blood vessel, took it up with a tenaculum, and put a ligature round it. On the following day I found the patient, who was much advanced in years, extremely weak; he had had a severe rigor, he grew gradually worse, and in four days after he died. On examination of the body there appeared to be some slight disease of the intestines, but not sufficient to account for death; he was seventy-four

years of age. A person from Jersey or Guernsey was attended by Mr. ——— for piles; Mr. ——— removed them with a pair of scissors, but did not see him on the following day. I was informed that he was exceedingly ill, and the next morning when I went to see him, he told me, as well as he could, that he was almost dead; and that he had an evacuation of such a quantity of blood as could scarcely be believed; on the following morning he died. The last case with which I shall terminate this sad catalogue, is that of the wife of a medical man in the country, who came to London with three piles. They were accompanied with some irritation, and I only removed one of them. There was no hemorrhage, but three days after she complained of a good deal of tenderness in the abdomen, and I was quite sure there was peritoneal inflammation. The symptoms increased, and on that day week she died. On examination I found the peritoneum much inflamed; she had the appearance of one who had died of puerperal fever. I have felt it my duty to state to you the consequences of performing the operation of excision for internal piles, in order to impress on your minds that it is safer to treat such cases by a ligature than by excision. The application of a ligature, however, is exceedingly painful, if it be drawn tightly; it should only be applied so as to interrupt the circulation, and destroy the life of the part, without exciting much pain. Leave the ligature on the part, but if the pile be of considerable size, as the ligature is apt to slip, more especially if the peduncle be large, a straight needle, threaded with a double ligature, should be passed through the centre of the pile, and tied on each side. This will excite little pain, and prevent the ligature from slipping off; the time in which the ligature comes away is from five to six days. A patient will come to the hospital, have the ligature applied, and walk away after it is done; it is most prudent, however, to remain for some time in the recumbent posture after the operation. This very morning a gentleman had the ligature applied, and thought so little of the operation that he would not go home to lie on his sofa, as I advised him. It must not be concealed that even the application of a ligature has been known to destroy life. Mr. Cruikshanks applied a ligature to an elderly gentleman from the country: the ligature produced gangrene, which extended beyond it into the rectum, and of this gangrene the patient died. Even this simple operation is not unattended with danger, if the patient neglects himself. He should keep the recumbent posture, and remain as quiet as possible, so that the circulation may not be hurried. Both excision and the ligature, therefore, will occasionally destroy life: but I am quite satisfied from experience, that, upon the whole, the ligature is most safe.* This is the advantage, gentlemen, of having lived beyond the middle period of life.

A young man may have been in the habit of removing piles by excision; he may do this twenty times with success, and consequently believe that the operation is perfectly safe. At length he meets with disappointments similar to those of which I have enumerated four instances: he will then retrace his steps, and consider whether he has been pursuing a right system—whether, upon the whole, some other plan may not be preferable, and his experience will teach him that the ligature is decidedly the safer operation. But there are other circumstances to be attended to in the treatment of this disease; internal piles are accompanied with a high degree of fever; they are covered with adhesive matter surrounding the rectum, and the sphincter ani is affected with spasmodic symptoms. Ought you, under such circumstances, to purge the patient very freely? Certainly not. Apply leeches, fomentations, and poultices to the part, and take blood from the arm; for exciting the intestines to action adds so much to the irritation, that if you venture to purge the patient once, he will not be able to bear it a second time. You must endeavour to allay the irritation by local and general treatment; if the inflammation continues for a considerable time, you must give an aperient once in three or four days, but it must not be oftener repeated. Sometimes internal piles undergo a natural cure. A celebrated literary character, to whose case I before alluded, who was under the necessity of rising at an early hour in the morning to perform his evacuation, became, at an advanced age, the subject of inflammation of the rectum. The result was, a loss of power in the part; he was for a week in the greatest possible danger, but at the end of that time the piles separated by sloughing, and he got entirely rid of the disease. Nature teaches us the mode in which we should proceed in cases of excrescences, which, as they merely form portions of projecting skin, may be removed without the least hazard. When you see at the anus portions of skin, which are the remnants of piles, exceedingly vascular and irritable, they may be removed by excision. I remember Dr. Fox had a patient who suffered exceedingly from this cause; the part was excoriated; he had constant tenesmus, and he had taken a great quantity of medicine without benefit. I snipped off the excrescences with a pair of scissors, and the patient was immediately relieved. As the prolapsus remains for some time after the removal of the piles, the best treatment is to inject astringent lotions into the intestine, and to apply the unguentum gallæ to the part. If the prolapsus is obstinate, you may make a little incision by the side of the sphincter ani, with a view of producing the adhesive inflammation, so as to glue the rectum to the cellular tissue surrounding it. This cannot, however, be done without danger in certain constitutions.

OF POLYPI OF THE RECTUM.

Before I quit this subject I should observe that polypi sometimes spring from the rectum. Most mucous surfaces produce polypi, and the rectum among others. There is a preparation on the table exhibiting a polypus in the rectum; there is one in the college, exhibiting a polypus in the internal surface of the bladder. These appearances may excite your surprise when you meet with them, and I think it right, therefore, to describe them to you. They generally occur in children, and very rarely in adults. The most advanced age in which I have met with them is twenty-two. The child, whose case I described to you, who sat upon a needle which entered the bladder, and formed the nucleus of stone, had a polypus which extended for a considerable length up the rectum. Its mother found something red descending, which was found to be a polypus, reaching three inches in length up the bowel. It was extremely vascular, of the same size throughout, and of a florid red colour, having nothing of the character of a pile. I found it hanging down from the centre of the anus, and on taking hold of it I drew down the rectum by it. This was the first case of the kind I had seen; I had never before heard of the disease. The child was brought to my house, and on drawing down the rectum, I removed the polypus with a pair of scissors. While I was at lecture, a person came from an inn in the Borough, where the parents of the child were staying, and told me that the child was bleeding very much. I requested Mr. H. Cline to go to the inn, who found that the bleeding was inconsiderable, and the child did extremely well. The way in which I have since removed polypi has been by drawing them down so as to bring into view the part of the rectum from which they spring, and, when this part is brought into view, to put a ligature round them, and remove the part below the ligature with a pair of scissors. I have seen in the course of my life ten cases of this kind, most of which occurred in infancy: two of them occurred at the age of puberty. I shall proceed with the subject of polypi in the ensuing lecture.

LECTURE LII.

THE first subject for our consideration this evening will be

POLYPI OF THE NOSE.

There are four different species of nasal polypi, the first and most common of which is the

GELATINOUS POLYPUS.

Polypi of this description grow from a narrow peduncle, are composed of a very soft substance, resembling jelly (hence their name), and are very slightly vascular; the second kind is the

HYDATID POLYPI.

These are formed by a collection of hydatids, and have the appearance of bags or bladders of water; with these there is generally a copious serous discharge; the third are the

CARCINOMATOUS POLYPI.

These have similar symptoms and appearances to scirrhous tumours in other parts of the body, are painful at intervals, ulcerate, and, during this stage, occasionally bleed; the fourth and last kind is the

FUNGOID POLYPUS.

These are the four different species of polypi of the nose. Now, gentlemen, I shall first describe to you the

GELATINOUS POLYPUS.

It is yellow and semi-transparent, very thinly streaked with vessels which are never sufficient to give it a red appearance. It hangs from the schneiderean membrane by a small peduncle, therefore loose in the nose, and if you stand opposite the patient, and he draws in and forces out his breath through the nostrils, you will then be enabled to see it advance, and again retreat to the posterior nares. The large size of the polypus, however, will often prevent this free motion. It generally has its origin in the middle chamber of the nose, between the superior and inferior turbinated bones. Here is a preparation (showing it to the class) in which you see it growing from the side of the antrum.

Polypi of the nose of this description often acquire a very considerable magnitude. When this is the case they extend into the posterior nares, and often hang over the edge of the velum pendulum palati, so that you can frequently see them at the back of the mouth; and, if they are not quite so large as to allow of this, they may be distinctly felt on passing back the finger. Two of the largest of this kind of polypi that I ever saw were from Sudbury in Suffolk. Here is one of them: it is of a size which rendered its removal by the forceps impossible; here is another preparation in which you see it extends through the velum, and here are others of a smaller size belonging to the same species. It not unfrequently happens, when their removal is attempted

by the forceps, that they will become broken, and some little address is often requisite to prevent this difficulty; they are firmly attached to the pituitary membrane of the nose, and unless the points of the forceps are applied near their bases, you cannot expect to be successful in extracting every part of them; consequently, they will again form, and the operation be again required. When you happen to pull away, along with the polypi, portions of the bone and membrane, you destroy the sources whence they originate, and in such cases prevent their return.

Now, gentlemen, the remedy for these polypi is extraction by means of forceps. Those generally employed are long, and have small points, the insides of which points or blades are made rough to prevent their slipping from the peduncle, and thereby losing their hold; the manner of using the forceps is this: I pass up a probe in a direction between the superior and inferior turbinated bones, and feel for, and ascertain the precise situation of the peduncle; I give the probe the direction which I have just stated to you, because I have invariably found these polypi springing from the middle chamber of the nose. I have never known one of them arise from the septum narium. Well, having satisfied myself of the situation of the peduncle, by means of the probe, then let it remain as a director for the forceps, and having carried the points of the forceps to the peduncle, thus guided by the probe, seize the peduncle and tear it off by a sudden jerk of the forceps: by adopting this mode polypi may be effectually removed. Always take care to lay hold of the peduncle, for, if you do not, and, on the contrary, grasp the body or end of the polypus, you will then break it off, and the introduction of the forceps will be again and again required. Using the probe as a director will be found a great assistance; as the forceps are immediately conveyed by it to the peduncle. I just now said that the polypus should be torn off by a sudden jerk: this is of importance, and you should keep it in your recollection. If you remove the polypus by gradual efforts, that is, by gradually withdrawing the forceps, you will not accomplish that which ought to be your object, viz. preventing the return of the disease; by a sudden jerk you are often enabled to tear away a portion of the pituitary membrane, and even the bone itself to which the polypus may be attached. By this you succeed in destroying the source from whence it sprung, and effectually obviate a repetition of the complaint; always recollect therefore to use a jerk, and not pull the forceps gradually.

If the person should be very young, and the nose small, you may remove the polypus with a pair of forceps similar to such as are contained in our common pocket instrument cases; indeed such are the forceps

which I often employ for the extraction of nasal polypi; if, however, the polypi should grow far back, you then will succeed best with the forceps I first mentioned.

Sometimes I take away polypi by merely using a pair of probe-pointed scissors. After cutting through the peduncle, if you desire the patient to blow his nose, the air will force it out of the nostril; but I should tell you, that when thus removed, they are more likely to return than when extracted by the forceps, because you do not with the scissors take away, as with the forceps, the pituitary membrane, and this is the source whence these polypi spring.

But, gentlemen, polypi not unfrequently extend into the posterior nares, even back as far as the spine, in which situation you may not only often feel them with the finger, but, when of this magnitude, frequently see them; these polypi must be removed by a pair of forceps exceedingly curved; their curve should describe at least half a circle, the curve of course being of such a size as to admit its free introduction into the mouth, these forceps should be passed to the back of the mouth, then their points or blades, are to be carried up the posterior nares, when, having satisfied yourself in the manner before directed that you have hold of the peduncle, you are to break it off by moving the forceps in a direction downwards and backwards. Another way, when the polypus is large, and when the peduncle grows from the side of the antrum, is to divide it by means of a pair of curved scissors, and then with your finger hook down the polypus at the back of the mouth, from over the velum pendulum palati; in this way it falls into the throat, and produces a sensation of choaking; retching is the consequence, and the polypus will be thrown upon the floor before you. Mr. Ring, a surgeon of Reading, had a patient with a polypus of this kind, removed in the manner I have just mentioned to you; it was a very large one, and when I first went to Reading, I put a ligature upon it, but this did not prove of any use, it only succeeded in getting away a small portion of it, the root was not removed; the polypus soon became again as large as ever; and I am now of opinion, that a ligature in these cases should never be applied.

If, after the operation has been performed, you think any portion of the polypus remains, you should, by means of a probe, pass up a piece of lint to the spot, to prevent any annoyance from hemorrhage; the lint previous to its introduction may be dipped in a solution of alum; indeed, where patients have objected to have the polypi removed by the forceps or scissors, it has been recommended to use injections of solutions of alum, or the oxymur. hydrarg.

The next species of nasal polypi which I shall describe to you, is the

HYDATID POLYPI.

These are generally found in young people. The first case of the kind that I ever saw was in this hospital; the subject of it was a young girl about sixteen years of age; when Mr. Cline attempted to remove it, it burst, and there escaped a small quantity of watery fluid; upon pressure being then made at the side of the nose, another burst, until at length bladder after bladder burst, and the whole were discharged. It was thought at the time the complaint was cured; in a few weeks, however, it again returned, and again was discharged. Since that time I have seen several similar cases. The peduncle of the hydatid polypus resembles the cord formed from the placenta; it is composed of thin fibres or films, which form the covering of the polypus, and these converge to complete the peduncle. The best plan of treatment that can be pursued for the cure of hydatid polypi, is daily to touch them with the muriate of antimony; this can easily be done by means of a camel hair pencil; a very few times will be sufficient; it acts chemically on the polypi, and quickly destroys them. It may be supposed that this strong application would hurt the nose; this, however, is not the case; but care should be taken to confine its application to that part only where its use is required.

The third species that I shall mention is the

CARCINOMATOUS NASAL POLYPI.

These are commonly met with in old people; they are usually attended with severe pain across the forehead, in the situation of the frontal sinuses—the passage of the air through the nose becomes obstructed from the size of the swelling—the tumour also presses upon, and occasionally obliterates, the lachrymal sac, preventing the natural course of the tears, thus giving rise to the inconvenience and symptoms of *fistula lachrymalis*. I have known the pain in the nose in these cases excessive; the pain is not constant, but occasional—and then dreadfully severe; at such times there is more or less hemorrhage, and this ultimately affords the sufferer a temporary cessation of his misery. In these complaints, I am sorry to be obliged to say, that nothing can be done except of a tranquillising nature; the belladonna and opium may be introduced; also the conium, with a view of affording ease; and, if the inflammation should be severe, you may apply leeches in the vicinity of the nose, together with evaporating lotions.

As regards internal remedies, these are likewise to be merely of a palliative nature; opium is the principal medicine given with this view, and it answers the purpose well; you are therefore to give opium in such

quantities as shall have the effect of lessening the dreadful pain; by this means you smooth the path to death, and I lament being compelled to state that, if you succeed in this, you will achieve all that medicine can accomplish. The fourth and last species I have to describe to you is the

FUNGOID NASAL POLYPUS.

There is a case of this kind at present in the other hospital. The first case of this description that I saw was in a young gentleman seventeen years of age; the particulars I will briefly mention to you. The father of this youth called at my house with him, for the purpose of inquiring what was to be done. At the time I saw him, there was a bleeding from the part, and this I understood from the father frequently happened. The parent asked me if I would remove the tumour, and I told him yes. This I did by ligature, but much sooner than I expected; for as soon as it was applied, the tumour dropped into my hand, the silk having completely cut it through. There was slight hemorrhage afterwards, which was easily subdued, by plugging the nostril with lint. Shortly after the operation he left London for Portsmouth. The disease soon returned, and was again removed by Mr. Copland Hutchinson. Subsequently to this it re-appeared, and ultimately the patient was destroyed. After his death, the body was examined by Dr. Mac Arthur, and he found that the tumour had very extensive attachments; that its base was extremely broad and diffused. Now I had previously thought that the disease had been confined to a single spot, or I certainly should not have attempted its removal. I therefore recommend you not to extract these polypi by the forceps: excise them with scissors, or destroy them by ligature; their extensive adhesions will, in either case, render the operation unavailing and ineffectual; and what is still worse, will do injury, by exciting irritation, whereby the disease will become aggravated. In such cases I shall in future try what effect will be produced by the muriate of antimony. But the disease may extend so far up the nares as to affect some other part of still greater importance than in the place where it originated—thus the cribriform plate of the ethmoid bone may become destroyed, and afterwards the brain itself partake of its malignant influence. Well, though there can be no hope of the diseased person ever getting cured in such cases as these, yet it may happen that, by judicious treatment, the inconvenience of the malady, together with the deformity it occasions, may be materially diminished; but to produce a cure under such untoward circumstances would be impossible.

ON DISEASE RESEMBLING POLYPUS, IN CHILDREN.

Before quitting this subject, gentlemen, there is another occurrence connected with it, which I wish to mention to you, it is this—You will often have children brought to you by their parents on account of supposed polypi of the nose; when you examine the children, you will probably find in their nostrils red projections, the appearance of which might have deceived you as well as the parents, had I not mentioned the matter to you. Be assured, when you observe these red projections in the nostrils of young children, that they are not polypi; the disease is merely an enlargement or thickening of the pituitary membrane, and if you try to remove or draw them away by means of the forceps, you will probably tear off a portion of the turbinated bone: the forceps must not be applied in such cases; such a practice would be exceedingly improper. What you are to do is this: Touch them by means of a small bougie, formed of nitrate of silver; from this application they will in a short time turn white, and very soon disappear altogether. You may rely upon it, that this is the only treatment required in such affections, and there is no necessity for submitting these poor little delicate creatures to any other operation.

The next subject for our consideration is

ENLARGEMENT OF THE TONSILS.

Children will be brought to you with swellings in their throats, and it will be stated that they have great difficulty of breathing, sleep with their mouths widely distended, the skin at the same time being covered by a profuse perspiration. Upon feeling the throat, looking into the mouth, or passing back the finger, it will readily be ascertained that one or both tonsil glands is enlarged. The complaint is generally the result of one of the diseases common to children, as the small-pox or measles, and the inflammation which produced it of the scrofulous kind. Sometimes the enlarged part is attached to the gland by a distant small peduncle: at other times the base of the swelling is of considerable size.

CONSTITUTIONAL TREATMENT OF ENLARGED TONSIL GLANDS.

To prevent the growth of these enlargements, and their formation altogether, the best medicines that can be given, for the accomplishment of these purposes, is the oxymuriate of mercury; and it will be found highly advantageous to combine it with the tincture of bark and rhubarb. I usually prescribe it thus:—

℞. Oxymur. Hydrarg. gr. j.
Tinct. Cinchon.
—— Rhei, āā. ℥j. M.

I order a tea-spoonful to be taken in a little white wine, twice or three times a-day, according to the age or peculiar state of the patient. Having already on several occasions explained to you the manner in which small doses of mercury act on the system in chronic inflammation, by restoring the secretions, it cannot be necessary for me to again dilate upon that subject. By uniting the mercury, as above, with bark and rhubarb, you will improve the appetite, strengthen the stomach and bowels, and gradually restore the vigour of the constitution. It is not of any great consequence what particular tonic you employ, should there be any objection to those I have just mentioned. Indeed, in very delicate children you will find it prudent to often vary the medicine; and a very beneficial one may be found composed of two grains of rhubarb and five grains of carbonate of iron. Your own judgment will direct you in what manner the medicines should be regulated.

LOCAL TREATMENT OF ENLARGED TONSIL GLANDS.

The application of the nitrate of silver will often succeed in getting rid of these tumours; you are to press down the tongue with one finger, then holding the nitrate of silver in its ivory case, between the finger and thumb of the other hand, gently apply it to the surface of the swelling; the application may be repeated, if necessary: where the caustic is applied, the part will soon become white, and scale off. A succession of these, produced by a succession of applications, will often effect a cure.

The sulphate of copper is sometimes used instead of the nitrate of silver, and succeeds very well. Alum is likewise a good application, but it requires to be applied a greater number of times than the lunar caustic; where, therefore, no inconvenience would arise to the patient or practitioner from distant residence, or other circumstances, it may be used with advantage; and, as an internal remedy, a medicine formed of the extracts of stramonium and conium; but I have never known it prove effectual, at least not entirely so. Well, then, when they are too large to admit of cure, by the plans already described to you, or when they resist the proposed methods, you are to remove them by ligature; it is easily applied, and may be done by first passing it through the eye of a probe, then carrying it over the tonsil, and bringing it out below; tie it in front of the diseased gland; you must of course previously give to your probe the requisite curve: if your finger should not be sufficiently long to make the knot, you should then use what is called the tonsil iron, an instrument well adapted for the purpose, and would do much better for performing the operation altogether than either the probe or finger. The operation occasions very little pain or incon-

venience. I have had a child, seven years of age, come to my house, have a ligature thus applied, and afterwards walk back to Islington.

If the tumour is not of that form which will admit of a ligature being put on in the way mentioned, you must then pass the ligature through the centre of the swelling, by means of a needle, and tie it above and below; in this case your ligature must, of necessity, be double: in this way you will succeed, as effectually as with the other mode, in producing a separation of the enlarged part.

I shall now, gentlemen, describe to you the

OPERATION FOR HARE-LIP.

The name of this disease originated from a supposition that it gives to the lip the same appearance as the lip of the animal bearing that name.

Hare-lip is sometimes single, that is, the fissure being only on one side; sometimes double, a fissure being then on each side, and occasionally attended with a want of teeth in the upper jaw; also a loss of the velum pendulum palati and uvula. Sometimes in the double hare-lip the only thing between the fissures is a small projection of cartilaginous substance attached to the tip of the nose; the soft palate, in these cases, is generally wanting, and the turbinated bone exposed. The deformity in these instances is most unsightly.

In the operation for the removal of hare-lip, the simple principle is union by adhesion or first intention. In single hare-lip you must perform the operation thus. [Here the learned lecturer shewed the operation on the dead subject, according to the description given.] Pare off the edge of the divided lip on each side by means of a small bistoury: in executing this step of the operation, take care that you cut off enough, for immediately at the margin the parts are hard and callous, and will not readily unite. Well, having pared off a sufficient quantity of both edges, all that remains to be done is to apply the ligatures, of which there are to be but two; this number will be found quite adequate. Now it is of great importance that you should be careful where the ligatures are applied, and I advise you to be particular in your adoption of the rules which I give on this point. Well, then, introduce one ligature immediately at the edge of the lip, that is, at the lowest part of the divided portions where the red part or line of the lip begins, and the other ligature is to be introduced exactly midway between the first and the extent of the wound towards the nose; thus the last ligature will be situated half way between the angles of the wound, at the lower part, and the fissure at the upper. As your object

should be to cause the edges of the wound to unite as soon as possible, any thing calculated to retard that effect should be studiously avoided; and, as wax is known to have a tendency to induce suppuration and ulceration, it should not be rubbed over the ligatures. Again the ligatures should not be too delicate, that is, not too thin; if they are, the lip might be cut through by them.

In performing the operation for hare-lip, there will sometimes be considerable bleeding from the superior labial artery. There will not be any necessity for applying a distinct ligature to the vessel, because you can easily tie the ligature at the angles of the lip in such a manner as shall compress the artery, and stop the bleeding. It is very improper to put a ligature on the vessel, as it interferes with union by adhesion: from its producing suppuration, the pus, of course, would form between the edges of the wound. On the fourth day after the operation, the middle ligature may be removed, and on the fifth or sixth, the other. In this respect, I am merely speaking of what generally may be done; as regards the time of removal, you must be governed by the state in which you find the parts: if adhesion had not taken place, it would not be proper to take away the ligatures on the fourth or fifth day, and you should wait a short time longer. Instead of silk ligatures, silver pins used to be employed for holding together the edges of the lip; these, most properly, have been relinquished: it is true they answered very well, as far as keeping the edges of the integuments in apposition was concerned; but the great objection to them was, that when on the fourth or fifth day you endeavoured to take them out, the difficulty of withdrawing them often occasioned the adhesions which had been formed to be completely torn through, and your operation so far defeated: the pain which the extraction of the pins produces is considerable, and the adhesions are frequently broken from the resistance, struggles, and cries of the child. Now, as regards the silk ligatures. you have merely to divide them by a pair of scissors, and the ends can be displaced without using the slightest force.

When the edges of the lip have been brought together, and the sutures applied, no after-treatment will be necessary, excepting what I have already communicated to you; you must not apply poultices, as they would give rise to the suppurative process instead of the adhesive. Your best plan will be to let the blood remain over the wound; let it clot there, and not sponge it off. This will be the best bond of union, and the adhesions which take place under this seldom give way.

Another point for our consideration, is the age when the operation ought to be performed. Should it be attempted on very young infants, or should we wait until a more advanced period? To this question, an

answer is easily given; and I reply, never operate on very young infants, but defer it until the completion of dentition. In very early life, there is always great danger from operation; and several infants, within my own knowledge, have died in convulsions, after the operation for hare-lip. Some years since, when I was at Yarmouth, I was told of a case that had terminated fatally: convulsions carried off the infant a few days after the operation. Not the slightest blame was attributable to the practitioner: experience had not then established the propriety of delaying the operation till a more advanced age. I was once asked, if I would operate on a very young infant, for hare-lip, whose parents resided in Fenchurch-street? I replied, Yes; and shortly after went and did it. I promised to call on the fourth day, but received a message, saying that it was not necessary for me to do so, as the child was dead. Some years ago a gentleman from Suffolk brought his infant to town to undergo the operation; it was performed; pins were employed. Two days after the operation diarrhœa came on; on the day following it was so excessive that the pins were removed; at the expiration of two other days the child was carried off. A woman once brought her infant to me on a Monday morning for the purpose of having it operated on for hare-lip. I completed it, and directed her to bring the child again on the following Thursday; she came, and told me the infant had died.

Now, if parents should urge you much to perform the operation on very young infants, explain the danger which attends it in very early life. Tell them of its fatal results; when, should they still press it, the blame will be on them, and not you. Children when so very young are not competent to undergo operations, and you ought not to perform them for hare-lip unless the children have reached the age of two years. After that period they possess some degree of strength, and are much less disposed to irritation and convulsions.

I have still to mention the operation required for *double hare-lip*. It has been recommended to cut away that portion of skin which sometimes exists between the two fissures. That, however, is not the best plan; indeed, it is a very bad one. Always allow that portion of skin to remain, you will find it a great support, and of considerable utility in rendering the operation perfect. Therefore you are to pare the edges of this portion of skin in the same manner as you were directed in the first operation. But you must not, when a hare-lip is double, operate at both sides on the same day. You must let one side get well, and then you may operate on the other. It now and then happens that the jaw will project very much in these cases, and will sometimes even shoot forward, and be attached to the tip of the nose. When the jaw does project, the deformity may be very much diminished after the wounds

have quite healed, by binding, on the most prominent part, a flat piece of lead, inclosed in lint; it may be readily confined to the situation by tape or black ribbon carried round the back of the head. When attached to the tip of the nose it should be separated from that part, and the operations then performed as before, that is, one deferred till the other is well; and the deformity will be removed by adopting the method just mentioned.

We sometimes perform an operation on the under lip similar to the one I have described to you for single hare-lip, in consequence of

CANCER LABII.

Which disease generally arises from the use of a pipe, and the manner in which it happens is this:—the adhesive nature of the clay of which the pipe is made, causes it to adhere to the lip; at length the cuticle becomes torn off, and the continued irritation frets the sore into true cancerous disease. I am quite sure that it is produced in this way, for I never saw the disease in the upper lip more than once. That the disease is of a scirrhous nature, even at the beginning, any surgeon must be satisfied: it is hard, has a bleeding surface, everted edges; and, as it proceeds in its destructive course, communicates disease to the glands; there is likewise felt in it, at particular periods, the most dreadful pain. I have seen in these cases all the foregoing real cancerous symptoms.

An operation for the complete removal of the disease is the patient's only real hope of succour. The oxyde of arsenic is said to have cured the disease—to have completely eradicated it. I can state, however, that this application (as well as others of a similar nature) has, by its irritatative qualities, produced a rapid disease of the glands, shortly after having been applied to the ulcer on the lip.

In removing the disease with the knife, you should make an opening in the lip, similar to what has been advised in single hare-lip; that is, it should be a triangular portion of the lip, including the disease entirely cut out; the integuments can then be easily approximated, and kept in their proper situation by as many ligatures as the size of the wound shall seem to require; generally speaking, two will be found quite sufficient. In removing cancer of the under lip, you divide the inferior labial artery; and you stop the hemorrhage by adopting the same method as was recommended in the hare-lip operation. Before we part, I must entreat your patience, while I describe to you, the disease called

TIC DOULOUREUX.

It is a dreadfully painful affection of the nerves of the face, but of what nature is difficult to say: the nerves in this disease are not in an inflamed state most certainly, for under the most horrid suffering they are found of a natural colour; the nerves are not increased either in their usual size, but, on the contrary, are found to be rather diminished. Mr. Thomas dissected a gentleman in whom the *sub-orbitar nerve* had been affected, and the nerve on that side was found considerably less than the nerve of the opposite side. Again, I think the disease to be one of diminished action, rather than of increased; and it has been found that stimulating, exciting medicines, are more beneficial than those of an opposite character.

The pain experienced by those afflicted with tic douloureux is, I believe, indescribable—it is of the most acute and distressing kind—I have seen it cause the tears to trickle down the cheeks of a fine old weather-beaten naval officer—a man who had fearlessly faced the cannon's mouth. After I had once divided the nerve for this complaint, I asked the lady who had been the subject of the operation, which gave her the most pain, the division of the nerve, or the disease? "Oh," said she, "the operation is a bed of roses in comparison with the agony occasioned by the disease." I was at one time visiting a patient afflicted with it, in company with Mr. Row, of Burton Crescent, when the pain absolutely was so severe, that it caused the person to roll out of bed, and fall on the floor at the time of our being in the room.

It is in general like the pain of electricity—patients will exclaim, "Oh! I had a shock at that moment." It produces a kind of flickering through the nerves; its motions are like summer lightning, and the pain cannot be compared to any thing more appropriate than to the horrid sensations created by electric shocks.

Treatment of Tic Douloureux.—The principal relief has hitherto been derived from operations, and these operations have consisted in dividing some of the nerves of the face; the division of the diseased branch will, at least generally, succeed in keeping off the pain for the space of three or four months, about which time it appears that the nerve either re-unites, or that its branches anastomose with others. If you ask patients if they will submit to an operation, they answer "most certainly—to any thing that will rid us of our present suffering." If they enquire of you whether the operation will be attended with permanent benefit, you should say that it is doubtful, but you rather think not. Indeed, the result of the operation is doubtful enough; for the pain will sometimes return almost immediately, but whether

by the same nerve is questionable. A person came several times from Bury to undergo the operation, and the pain used to return before sensation; that is, a numbness of a part of the cheek and upper lip would still continue, notwithstanding the pain was as severe as ever; the divided nerve in this case was the sub-orbitar; well, then, the division of the nerve does not always succeed in giving relief so long as one might have expected. If it should be deemed requisite to divide the sub-orbitar nerve, it should be done a quarter of an inch below the orbit; the nerve passes out of the foramen half an inch below; so that you are to divide it mid-way between the foramen and the edge of the orbit—if you divide it lower than this, you will leave some branches which still continue the disease; the proper mode to adopt for dividing it is to introduce a sharp-pointed bistoury at the distance from the orbit already stated; and, carrying the point of the instrument close upon the bone, you hook up the nerve on its edge, then press upon the skin over the edge with your finger, and at the same time withdraw the knife through the opening by which it entered; in this way as you take out the knife the nerve will be divided; you ought to ask the patient if he feels a numbness of the upper lip, and if he should not, your operation will be incomplete. When necessary the supra-orbitar branch is to be divided in a similar manner, by introducing the knife under the integuments of the superciliary ridge, and cut through the nerve immediately as it emerges from the supra-orbitar foramen, carry the point of the knife from the nose outwards.

When the submental nerve requires division, you need not make any incision through the integuments, but may perform the operation by placing the knife within the mouth, and directing its point downwards, to the mental foramen, where the nerve passes out, and by gliding the knife along the bone at that part, the nerve is sure to be divided; in performing this operation, you may direct your knife by the bicuspidati teeth, the anterior maxillary foramina being just below them.

The best medical treatment of tic douloureux, with which I am acquainted, is the exhibition of the carbonate of iron. Mr. Hutchins, of Nottingham, has published a work on the disease now under consideration, in which he speaks strongly in favour of the above medicine: it certainly is an admirable remedy—and the profession is much indebted to Mr. Hutchins for having recommended it. I may here remark, it is much to be regretted that country practitioners do not more frequently publish the result of their observations and experience; much valuable knowledge is lost to the world from their neglect of this important duty.

In speaking of the carbonate of iron, and of medicine in general, when given for the cure of tic douloureux, it cannot, of course, succeed, should the disease be otherwise than functional; if it should be caused, as in the case of Dr. Pemberton, for example, (who suffered more, probably, than any other human being from this malady,) by a piece of bone projecting into the brain, medicines will prove utterly unavailing, as regards cure; and temporary ease is all that can be afforded.

Five minutes more, gentlemen, and I have done.

ON AURA EPILEPTICA.

A man was sent to me by a surgeon of Watford having this disease; he would be occasionally seized by a severe pain in the thumb, which gradually extended up the arm, in the course of the radial and brachial nerves, through the axilla to the neck; his head would then become twisted, and in a moment he would drop on the floor in a fit: shortly afterwards he would get up, and appear as well as ever. I cut down upon the radial nerve by the side of the flexor carpi radialis longus tendon, exposed about an inch, and cut out five-eighths of it. After this the pain entirely left him, and he returned to Watford, where he remained, completely cured.

Gentlemen, I am very sorry for having detained you so long. (*Applause.*)

LECTURE LIII.

ON POISONS.

POISONS are those substances which, in small quantities, produce deleterious effects on the human body. Though this is considered the best definition of poisons, yet there is no substance considered as poisonous, which in very small doses is not capable of producing a beneficial effect. Several of the poisons, indeed, in minute and well regulated doses, produce the best possible effects—arsenic is an example of this.

Poisons are derived from five sources, viz.: there are those from the *animal* and *vegetable kingdom*—there are the *mineral* and *chemical* poisons—and another furnished by man himself, is called *morbid poison.*

You will find such a difference with regard to the effects of morbid poisons, when compared with the others, that you will speedily relinquish any opinion you might have formed respecting a supposed reciprocity of action between them.

In tracing the operations of poisons, we find some of them affect the

vascular system, others the nervous, while many poisons affect both the nervous and vascular systems at the same time. In looking at poisons from many animals, for example, we find the first action in the arterial system, while the influence of others evidently begins in the nerves. The poison communicated by the viper and rattle-snake attacks the arterial system first; that from the bite of a rabid animal, influences the nervous system first; but ultimately in these cases both become affected: thus, then, some poisons first affect the nervous system, others the arterial, and others both.

With regard to the vegetable poisons—all of these act on the nervous system: persons who have been destroyed by these poisons, have been said, upon examination after death, to have had inflammation of the inner coat of the stomach, because in some instances the vessels have been found larger and more filled with blood than in others. These appearances, however, are common in cases of sudden death, where there has been congestion of the vessels of the stomach. These appearances are not the effect of inflammation, they have nothing of the character of inflamed mucous membranes, and are entirely destitute of that vivid redness which ever accompanies the latter. No, the influence of vegetable poisons is directly on the nerves; and, in the next lecture, I will show you a curious experiment with one of these poisons, when you will have an opportunity of seeing an animal taking food almost at the very moment of its death; the dissolution of the animal will occur in a very few minutes after the introduction of the poison under the skin; so that the shortness of the time in which the effect is produced, will show the impossibility of its having been the result of inflammation. Thus, gentlemen, will vegetable poisons destroy life by direct influence on the nervous system, without giving rise to the slightest inflammation. Mineral poisons destroy, some by arterial, and some by nervous influence; but those which are mostcommonly taken, are arsenic, muriate of barytes, and oxymuriate of mercury, and each of these produces violent inflammation. With regard to arsenic, it has a direct influence on the nerves as well; and all of you must have seen it produce the most powerful convulsions immediaely after it has been taken. In those who have been destroyed by lead, no appearance of inflammation has been found in any part of the body, no such mark either in the stomach, or any portion of the intestinal canal; the inner coat of the stomach in many of these cases appearing less vascular than usual, which evidently proves that death is not produced by inflammation in this part, but that it is the result of a direct influence of the poison upon the nerves.

The action of morbid poisons are various, some being on the arteries,

some on the nerves; in typhus fever, more commonly called gaol fever (which arises from the number of persons crowded together rendering the air impure, and unfit to sustain the vigorous actions of life;) the first effects manifest themselves in the nervous system, producing great depression of the mental and bodily powers, through which, ultimately, the persons are destroyed. It renders the patient, at an early period of the complaint, incapable of being roused, so great is the depressing influence of the nerves.

Many of the morbid poisons act directly on the arterial system; as, for example, small-pox: here inflammation is first produced, which is succeeded by fever, the suppurative process, considerable local irritation, and the secretion of matter capable of propagating the disease; other morbid poisons, as measles, for example, first affect particular parts, and afterwards the entire system: in measles we first see the conjunctiva inflamed; then the mucous membrane of the nose becomes affected, producing an increased secretion of that part; then the trachea and bronchia become similarly influenced, and at length the lungs, giving rise to a troublesome cough, and about that time the fever occasioned by the disease becomes general throughout the system. The affection of measles is so easily communicated, and the infectious matter so subtle, that it readily floats in the air, and is of so infectious a nature, that it generally runs through entire towns and villages, where any portion of the children become affected by it; the air is likewise capable of communicating the disease to the inhabitants of distant parts. But the most infectious of all the diseases with which I am acquainted, is that called mumps. If this disease makes its appearance in a school, more than half the children will become affected by it. I was some years ago attending a patient at Hackney with Mr. Toulmin, at a school where there were more than sixty scholars, some of whom at the time were afflicted with the mumps. At a subsequent period, I inquired of Mr. Toulmin how many of the scholars had been attacked by it; and he informed me, thirty-six or thirty-seven; so that it had attacked considerably morethan half.

Poisons diminish in effect by repetition; opium, therefore, if given for any considerable time, will lose its influence, if the quantity be not increased. Now morbid poisons, by repetition, likewise lose their influence. It very rarely happens that any gentleman passes through his apprenticeship at the hospital without being affected with the hospital fever, and it not unfrequently happens that the first attack is fatal, and more particularly so to young men who are fresh from the country, who have been accustomed to a fine wholesome air: it generally commences by headache, and which is succeeded by fits of shivering. If the fever

should attack the individual a second time, which it seldom does, it will be slight, and its effects insignificant, compared to those in the first instance. The same thing happens in scarlatina, the fever being much less the second time than the first; the inflammatory symptoms in such cases are mitigated, and much less severe. In vegetable poisons, the effects upon the body are generally proportioned to the quantity of poison taken; not so, however, with morbid poisons, for no particular influence is manifested, whether the quantity inserted be large or small, whether the point of the knife be loaded with the poison, or whether it be slightly touched with it; its effects depend upon the state of the constitution at the time the poison is introduced; its action is modified by the peculiar condition of the patient, and not upon the quantity of the poison. In opposition to this result, Dr. Fordyce believed that, if the poison were diluted, its influence would be much less severe; accordingly he tried some experiments, attempting to prove this, and exceedingly diluted the poison with water; the effects, however, were precisely similar to those excited by the poison in its concentrated state; he therefore relinquished the opinion as untenable. This, then, is a remarkable difference between vegetable and morbid poisons; the first produces effects in proportion to the quantity taken, whereas, in the latter, the quantity of poison makes no difference in its particular specific action; but this is regulated by the peculiar condition of the patient. Whether morbid poisons be taken from the dead or the living, their influence appears to be the same; a medical man, whom you all respect very much, inoculated his child for small-pox with matter taken from a subject in the dissecting-room; this was exceedingly wrong, such matter ought not to be made use of; and I merely mention this fact to you for the purpose of showing that the virus, under these circumstances, will produce the disease, and even in its mildest form, for the child of this gentleman did extremely well, and had the disease favourably.

Now, as to the time when the influence of vegetable and animal poisons begins to show itself, there is likewise a very great difference; the most powerful of the vegetable appearing, in many instances, almost immediately (however, in this respect, there is some variety); whereas the symptoms arising from morbid poisons are often protracted to very distant periods. In natural small-pox the disease generally appears fourteen days after the infection has been received; in inoculated small-pox, about the tenth day; the cow-pox, the ninth or tenth; in scarlatina, the seventh day, but I have known it show itself on the third day. I knew a lady whose family was exposed to the infection of scarlatina; the disease appeared in one of her children at the end of three days, in

another on the fourth, in another on the fifth, and, in herself, at the end of three weeks or a month. I knew another child in whom the disease did not appear until the expiration of seventeen days.

The measles usually appear from seven to fourteen days after infection, but generally about the eighth day: it is quite right that you should be acquainted with these particulars, for parents will think little of you if you are incapable of answering such questions. Well, then, natural small-pox about the fourteenth day; measles from the seventh to the fourteenth; and scarlatina about the end of a week.

If children have imbibed the infection, it is wrong to prepare them for the consequences; for where children are so treated, they are invariably worse. With respect to scarlatina, the less the fever is which attends the disease, the greater I consider the danger to be from the local consequences, after the specific malady has terminated.

I will now say something of individual poisons. First, I must observe, that there is a remarkable difference as to the time when the effects of morbid poisons begin to be manifested; in some instances twelve months have been known to elapse after the insertion of the poison, before the symptoms appeared. Dr. Babington published a case in the *Medical Researches*, where he stated that the symptoms were not apparent until the three hundred and sixty-fourth day after the insertion of the poison. Even the effects of marsh miasmata do not, in some instances, show themselves for some months after the infection has been received. A lady went into the country in August, having with her two children and two servants. The part of the country in which they resided during their absence was damp and boggy; she returned again the following October: at Christmas the youngest child was attacked with an intermittent fever, and a few days afterwards the same disease appeared in the person of the eldest daughter; in succession the two servants, likewise, had it. Well, then, here was an example in which the seed of an intermittent fever had been sown more than two months before the symptoms were apparent.

Those persons who have had ague, and who are subsequently assailed by fevers, or even the slight fever attending a cold, will have it assume a typhoid character; what I mean is, that fevers in those individuals who have had ague will generally be of a typhoid nature.

I will now speak more particularly of

ANIMAL POISONS.

The Wasp and the Hornet.—The sting of the wasp and the hornet gives rise in many cases, to very great pain and severe inflammation. The best application to mitigate the effects of those stings, is composed

of one drachm of opium rubbed down in an ounce of oil: put some of this on lint, and lay it over the wound, occasionally changing it; at the same time you should keep the bowels open by aperient medicines. The poison communicated by

The Bite of the Viper not unfrequently proves destructive to life; it has both a nervous and arterial influence. A gentleman who was once in company with me on a shooting excursion, upon seeing a viper on the side of a bank, struck it with the butt-end of his gun, and supposing that he had killed it, put his hand towards it, for the purpose of taking it up; the reptile, however, was not dead, but had merely formed itself into a coil, and sprang upon the gentleman's finger; he instantly sucked the wound, and shortly afterwards his tongue become paralyzed, and for a time the faculty of speech was entirely lost: this clearly shows that the poison of the viper has a direct influence upon the nerves, and that it affects the vascular system, is also equally evident, for, in the case of this gentleman, the inflammation of the finger was very great, and extended up the arm even to the shoulder: by taking aperient medicines, and the application of poultices, this gentleman ultimately recovered.

There was a man some time since admitted into this hospital in consequence of the bite of a viper; the power of speech in this patient had but imperfectly returned, after a lapse of six months from the infliction of the injury. When I was formerly trying some experiments in comparative anatomy, I was anxious to see what effects were produced upon living structure by the poison of vipers; and, with a view of ascertaining, I confined a rabbit and viper together, and, by irritating the viper, induced it to bite the ear of the rabbit: the wounded ear soon began to droop, as did also the other ear shortly afterwards: the animal was soon seized with convulsive motions, which were quickly followed by death. Upon dissection, the part which had been bitten was quite black, and the cellular tissue on that side of the animal where the wound had been given, after the skin had been stripped off, appeared to have been discoloured by extravasated blood. A rattle-snake, that was confined in a cage, some time since, bit a man in the finger; the patient was attended by Sir Everard Home; the inflammation rapidly extended up the arm, and to several parts of the body; abscesses were produced, and, after languishing several days in great suffering, the patient died.

Treatment of the Bite of Vipers.—I tell you what I once did for myself, when I met with an accident of this kind, whilst trying the experiments to which I have just now alluded. Among others I was in the habit of freezing reptiles: you all know that a frog may be frozen so completely, that, by slightly pulling the legs, the joints will crackle and break; yet, by the application of gentle and well regulated heat, the

muscles of the animal, upon the melting of the blood, will begin to tremble, and soon regain their natural functions; and a few minutes after having been apparently dead, and converted into a solid piece of ice, the animal will be seen hopping about the room.

Vipers also may be frozen, and will regain their actions in a similar manner. On one occasion, after having taken a frozen viper out of the freezing mixture, and not suspecting that it had so quickly regained its natural state, I was bitten by it on the back of the hand; this happened one evening at lecture; and the late Mr. Fox, the dentist, who was present, and at that period a pupil of mine, at my desire, immediately excised the wound by means of a lancet, and I applied a bandage tightly round the wrist for the purpose of preventing absorption, in case any of the poison had remained. This treatment completely succeeded, and not a single bad symptom followed the injury. This is the plan, then, that I always advise you to pursue in cases of this kind: cut out the part which has been stung, and apply a ligature above the wound, if the situation will admit of it, with a view of preventing absorption. With respect to the poison of rabid animals producing the disease called *Hydrophobia*, and which disease is so different in its character, so opposed to those arising from any of the other poisons, so marked in its nature, so horrid in its effects, that upon seeing it you could not hesitate to form a correct opinion as to the nature of the malady. The first symptom a person experiences who has been bitten by a rabid animal, is pain in the injured part; and this is usually felt from the third to the fifth week. The next symptom is a sense of chilliness, succeeded by rigors and heat; then a difficulty of swallowing is felt, not of liquids in particular, but of any substance: this arises from the constriction of the muscles of the pharynx; and so violent are the spasms of the throat that, upon offering the patient any thing to swallow, you would think it would directly occasion suffocation; he will desist from the attempt, and tell you he will try again by and bye; upon again applying the cup to his lips, he will be seized with the most horrid shuddering, turn away to avoid the sight of what he was about to take, and sit down in a state of exhaustion. It has been said, that persons having this disease bark like a dog; this is not true, as the noise is occasioned by violent inspirations; whereas the barking of a dog is the effect of expiration.

In hydrophobia there is generally extraordinary irritability. I have seen two or three examples where the slightest touch of the bed clothes would produce a sudden impetuous passion; and in two children whom I have seen, they would beat away the bed clothes, and could not suffer them to cover their bodies. If you direct a patient having hydrophobia to go into a warm bath, he does not object, but will tell you he will try;

upon approaching the water, however, and putting in his foot, he will immediately jump, and tell you he cannot enter the bath. By persuasion, they have afterwards plunged in, when the violence of the convulsions were such, that, if not immediately removed, they would have been drowned. When in the bath, even the slight waves striking against the neck give rise to the most dreadful spasms; and in one case, when the patient was in the bath, and the medical attendant dashed some of the water against his face, he exclaimed, in great agony, "Oh, don't; that is cruel—that is too bad: I cannot bear it." I mention these circumstances for the purpose of showing you, that in hydrophobia there is a great excitement of the nervous system; and it is quite erroneous to suppose that all the symptoms of the disease are produced by inflammation. In hydrophobia and tetanus the symptoms very nearly approach, yet in the two diseases there is a very great difference.

On the dissection of those who have died of hydrophobia, there has been found inflammation of the internal surface of the pharynx; the mucous and muscular coats of the stomach similarly inflamed, and the muscular fibres of the latter in a state of violent contraction, the contents of the stomach not digested. Now, these appearances are not sufficient to account for the symptoms, and the cause certainly resides in the nervous system. He who supposes, therefore, that the disease depends upon inflammation, and treats it by bleeding, does not entertain correct views of the disease; he is quite mistaken in its character. Two or three cases were treated by copious venesection some years ago in the East Indies; the symptoms, however, were not those of hydrophobia, but of inflammation of the œsophagus. A man, some years ago, in the other hospital, had symptoms resembling hydrophobia; he never had received a bite; and, upon examination after death, the œsophagus situated behind the heart was found to be greatly inflamed; the symptoms were not those of hydrophobia, but of inflammation of the œsophagus.

I advise you, gentlemen, to read the paper which I before alluded to, published by Dr. Babington, in which a complete history of the disease was given; and you will there see that the loss of blood does not tend, in the slightest degree, to relieve the malady.

The two first cases that I saw were treated by bleeding; the loss of blood reduced the strength, but did not mitigate the symptoms; on the contrary, I think the irritability was increased from the weakness which the venesection occasioned.

A rabid animal will at first lap fluids, but cannot take solids; will throw his meat among the straw, and bite at every thing near him; his master will take his food to him, who will be treated by the animal at first

in the customary manner; as the disease advances, however, the respect and attachment to the master becomes lost, and the animal will bite him likewise. After lapping a little water, the dog will take hold of the vessel between its teeth, and then dash it to the ground; thus it will be observed that the natural character of the animal remains for a long time unchanged. A gentleman living in a village had a pointer with this disease: he behaved as well as usual in the field; would stand, back, and bring the game; but, after the sporting was over, he would bite any animal that came near him, and at length ran entirely away. Upon examining dogs that died of this disease, there has been slight inflammation observed upon the internal surface of the stomach and pharynx, a sort of efflorescence; and all human beings who have died with this disease have been said to have had, more or less, a similar appearance. A few words on the

Treatment of Hydrophobia.—The best mode that can be adopted is, immediately after the part has been bitten, to cut it out; you should first ascertain at what depth the teeth have entered, by means of a probe, and then take care to excise a sufficient quantity, and leave no part of the injured integument, cellular membrane, or muscle, to remain. If persons should object to the use of the knife—foolishly object to have the poisoned part cut away—I advise you in such cases to let sink into the wound a small piece of the potassa fusa; this will readily dissolve, and, becoming liquid, its cauterizing influence will be communicated to each part of the wound, and thus destroy the influence of the poison. The best plan decidedly is the immediate excision of the part, and, where it has been done directly after the injury, it has, I believe, in every instance, been successful in preventing the disease; if this practice should be opposed, the next best plan is the employment of the potassa fusa: I am speaking of these means, you will observe, as preventives, and as for medical remedies, when the symptoms of hydrophobia have once appeared, I am not acquainted with any. Every medicine, I believe, has been tried over and over again, and all have been found alike ineffectual; the only thing in the way of medicine that I think calculated to do good, is that which has lately been adopted in France, viz., the injection of warm water into the veins. To make the employment of the remedy safe, however, and to prevent pressure of the brain, the same quantity of blood as the water to be injected should be previously abstracted. With this precaution, I think the remedy a very proper and feasible one. I may here remark, that the blood need not be abstracted before the injection of the water, but may be let flow from one vein while the water is thrown in at another, and this probably would be the better plan.

LECTURE LIV.

OF VEGETABLE AND MINERAL POISONS.

It remains that I should say that a few words on the subject of vegetable and mineral poisons. One of the vegetable poisons is *hemlock*; I have not myself seen any instance of its proving destructive to life; the common effects which it produces are giddiness, vomiting, and very severe pain in the head. The effects of this poison are known rather from history than from any recent observations which have been made with respect to it. The Greeks were in the habit of putting to death, by this poison, persons who had forfeited their lives to their country; and it was by this poison, as most of you are aware, that Socrates was destroyed. It does not appear from the accounts which history has transmitted to us that Socrates suffered much in his last moments, since we are told that, during the time he was drinking the hemlock, he said a cock should be sacrificed to Æsculapius for the ease with which he departed life. Tobacco is a highly poisonous substance, though it is rarely given in such quantities as to prove destructive to existence. I have known it, however, destroy life, both when used as an injection and when applied externally. I will mention a circumstance which occurred to me, in order to put you upon your guard with respect to the use of tobacco enemata. I witnessed an instance of this some years ago in the other hospital, in a young woman who had strangulated hernia. A drachm of tobacco in a pint of warm water was injected into the intestines, to assist in diminishing the strangulation. There were no previous symptoms which led me to suppose that the patient was near her dissolution, but soon after the injection was administered she became exceedingly depressed, a deadly paleness overspread her body, she had a cold perspiration, vomiting increased to a great degree; soon after she became insensible, and in that state died. This was not more than three quarters of an hour after she had taken the tobacco enema. On this account I mentioned to you, when I was on the subject of hernia, that it was dangerous to use this substance without feeling your way in its employment. It is better not to inject at first more than half a drachm of tobacco in half a pint of water; if the patient should not be affected by this quantity, another half drachm may then be employed. I am aware that two drachms or more are sometimes injected without any bad consequences, but this is in cases where the patient has considerable strength of constitution. Where the constitution is delicate and weakly, even a drachm of tobacco used in an injection will sometimes prove destructive to life.

I shall now mention to you another circumstance respecting the ex-

ternal application of tobacco. The mother of a boy, who was the subject of tinea capitis, having heard that tobacco was the best remedy for this complaint, went to a tobacco dealer, and bought some tobacco juice, which, as I afterwards learnt, is prepared in the following way:

A quantity of moist tobacco is placed between two rollers, and very strongly pressed, so that the juice exudes; and, in this way, an extract of tobacco is produced of the very strongest kind. It is used for the purpose of destroying insects, and it is also employed in eruptive complaints of sheep and other animals.

The woman put this preparation on the head of the boy, at one o'clock in the afternoon: very soon after he became pale, and exceedingly sick. Feeling that purging was coming on, he went to a necessary at the back of the house, where he staid so long that his mother went to look after him, and found him with his clothes unbuttoned, sitting in an almost insensible state, with his head resting on his shoulder. He had had a copious evacuation into his clothes; he was carried up stairs, put to bed, and at four in the afternoon he died. A surgeon in the neighbourhood hearing of these circumstances, communicated them to me. I attended for the purpose of examining the body, and did not find any appearance of disease. There was a little effusion of fluid between the scalp and the bone, but none in the membranes or ventricles of the brain. If tobacco be introduced in any quantity into the stomach of animals, it kills them very quickly, by putting a stop to the action of the heart. The oil produced from tobacco, by burning it, is highly poisonous; it destroys, if administered in very small quantities. With respect to its introduction by smoking, I have never known an instance of death being produced by it in this way.

Opium, administered in considerable quantities, destroys life, by producing apoplectic symptoms. The first case of the destruction of life by opium, which I had an opportunity of witnessing, was one in which the person was suspected of having committed a murder. He was seen at a great distance from the spot where the murder was committed, very shortly after the crime was perpetrated, but it appeared that he had ridden with extraordinary speed; his horse was excessively heated. It was proved that he had passed through a particular gate, soon after the murder, and other strong circumstances of suspicion concurred, so as to leave little doubt of his guilt. Finding that he was likely to be brought to trial on this charge, he determined to destroy himself, and for that purpose he took a quantity of solid opium. The quantity which he took was not exactly ascertained. At twelve o'clock in the day he had apoplectic stertor; on putting a candle to his eye, the pupil did not contract, and he was in a state of insensibilty. Attempts were

made to produce vomiting without success, and at nine o'clock on the following morning he died. On examination of the body after death, the stomach appeared to be very much reddened, and a considerable quantity of solid opium was found in it. In all cases of violent death from opium, a reddened appearance of the stomach will be found. I do not, however, believe that it is really inflammatory; inflammation, and a mere error loci from determination of blood, are very different states of parts. I do not believe that opium has the power of producing inflammation of the stomach, and I mention this that it may guide your judgment if you should be called upon to give evidence in a court of justice, in a case of this kind. You should make up your minds never to give an opinion as to the death of an individual being produced by a vegetable poison, unless you find that vegetable poison in the stomach, or some other strong proof be given that it was administered. No appearances after death ought to induce you to take an oath that an individual has perished by a vegetable poison. I may here mention that Mr. Hunter himself used to lament that he had not taken the same precaution on the occasion of a trial which agitated the public mind very much forty years ago. He regretted that he had not made more experiments on the subject of poisons before giving an opinion in a court of justice. He found himself a good deal embarrassed on that occasion; the lawyers took advantage of his embarrassment; and he used to express his regret publicly in his lectures that he had not given more attention to the subject before he ventured to give an opinion in a court of justice. When opium is taken in considerable doses for a length of time, the result is, that it renders the complexion of the person extremely sallow, it produces obstinate costiveness, and indeed arrests all the secretions. It also very much diminishes the virile power and the disposition to sexual intercourse. I have known several instances of its producing this last effect, when it has been taken for a length of time. We read, indeed, that the Turks are in the habit of taking opium for the purpose of increasing the propensity to indulge in sexual intercourse; but, as far as I have had an opportunity of judging of this fact, opium produces quite an opposite effect. A gentleman, who had taken opium very freely in consequence of the exhilarating effects it at first produced, told me that for a long time he had suffered no inconvenience from it, and that he always found his pulse increased in quickness by its use. In general, the pulse is not increased in quickness: persons who take opium have a quick pulse, which becomes slow and full under each additional dose, and at this time they feel increased strength and exhilaration. In some cases, it is true, opium produces a quickness of pulse. A student of this hospital, who made a number of

experiments to ascertain the effects of opium, found that when he took it in considerable doses, his pulse rose from 75 to 86, and then began to decline till it fell to 65. Opium, when taken in considerable quantities, after a time puts a stop to all the secretions; the semen is secreted in very small quantities, and in some cases it is scarcely secreted at all. A married man, who took opium very freely, declared to me, that, though he slept very regularly with his wife, it was rather a matter of ceremony than of practical duty, for he never felt the slightest disposition to sexual intercourse. I knew a man who had during two years taken very large quantities of opium for pains in his bowels, who also declared to me, that he never had the least inclination for amatory indulgence. The nerves are rendered highly irritable by opium. A gentleman, who was in the habit of taking opium, came into my room, where the window was not quite fastened, and the wind whistled a little behind it. After chatting for a short time, he rose in a state of violent agitation, and rushing to the window, exclaimed, "I can bear it no longer; this d——d Æolian harp will distract me." This irritable state of the nerves, produced by opium, is relieved by a fresh dose: it becomes absolutely necessary to the patient, and the nervousness produced by the opium of yesterday is relieved by the opium of to-day. The largest quantity of opium I have ever known taken, was swallowed by a pupil in this hospital. He sent for half a pint of the tincture of opium, for which he wrote a prescription. The chemist had not quite half a pint, but he sent somewhat more than seven ounces. Of this quantity the pupil took so much, that not more than a tea-spoonful was left in the phial: he must have taken, therefore, about six ounces and six drachms. As this young man was a dresser of mine, I felt particularly anxious about him; and, being informed, during lecture, that he had taken laudanum to destroy himself, I immediately went to the house of Mr. Phillips, the surgeon, in Union-street, where he was lodging. They were very properly walking him to and fro, and a quantity of the flour of mustard in water had been given to him, with a view of producing vomiting, but without success. I ordered him a large dose of the sulphate of zinc; but this did not produce vomiting, though it occasioned irritation in the throat. I directed the sulphate of zinc to be repeated; and on quitting the house I met Dr. Marcet, my colleague at Guy's, to whom I communicated the circumstances. Dr. Marcet immediately said, "Pray give him fifteen grains of the sulphate of copper." We gave him this quantity of the sulphate of copper, which, very shortly after it had entered the stomach, produced vomiting; and he threw up a quantity of liquid, smelling very strongly of opium. He was kept constantly in motion, the vomiting was assisted by copious draughts of warm water,

and in this way he recovered. Two days after, I met him in the square of the hospital, and asked him, how he did? "Why (said he), my throat is a little sore from the effects of the sulphate of copper." "And how came you to take the opium?" said I. "Why, sir, (said he), I will tell you: I think my teeth are not so white as they used to be; the women observe this, and no longer regard me with the same affection; this it is which makes me miserable." (*A laugh.*) Perceiving that he was mad, I took measures to have him placed under the care of his friends. I have known persons take a drachm of opium day after day, in divided doses. A Turk, who was selling rhubarb at the other hospital, being asked how much opium he could eat, showed us how much on his fingers. A drachm of solid opium was given to him, and he chewed it before us. People often ruin themselves by a disposition to take opium. I knew a woman, in tolerable circumstances, in a village in Norfolk, who was in the habit of taking large quantities of opium; she would buy a pint of laudanum at a time, at a chemist's shop, and, if any remained after filling her bottle, she would drink it off in a wine glass. This woman was at last unable to buy her opium, and she became a pauper in the parish in which she resided. It is a habit which grows upon persons excessively, and ought never to be indulged. Opium applied externally, will produce poisonous effects; not so soon, indeed, as when it is administered internally, but with equal certainty. If you apply opium over an extensive surface of sore, it will produce obstinate costiveness, and violent pain in the head, a furred brown tongue and a high degree of fever. I remember a man in the other hospital, who laboured under these symptoms, in consequence of having opium applied over an extensive ulcer. It was not at first thought that the opium produced these effects; but upon its being suspended, the symptoms disappeared. I have known opium in water applied on the surface of a scald in a child, which, I really believe, occasioned its death. It produced violent constipation of the bowels, and convulsive motion in the eyes of the child. You should never apply opium over any extensive wound. If opium be injected into the veins of an animal, the pulse will be so quickened, that it can with difficulty be reckoned. It will then become so convulsed, that you can scarcely hold it on the table. In about five minutes it is tranquillized, and the pulse gradually sinks, until it is hardly perceptible; after an hour, the pulse is reduced to from 20 deg. to 30 deg. below the ordinary pulsation, which in a dog is from 110 to 130. The animal becomes sleepy at the same time that its pulse is reduced. With respect to the treatment of persons who have taken considerable quantities of opium, active emetics should be immediately administered, if you have an opportunity of doing so; such as the sul-

phate of zinc or the sulphate of copper. But it will often happen that you have not these substances at hand: you must endeavour in that case to excite as much irritation as possible in the throat, with a view of producing vomiting. I certainly think, however, after the experiment which you had an opportunity of witnessing in this theatre, and that which was made on the dog in the other hospital, that the instrument for evacuating the stomach affords the best means of saving persons, who would otherwise perish under the influence of opium. I mentioned to you on a former occasion the case of a young lady who had taken opium, in which every means which I could employ for the purpose of producing vomiting proved completely unavailing. When the œsophagus has lost its functions, which it soon does from the influence of opium, no stimulating substances will produce the least effect upon it. I sat hour after hour by the side of this young lady, watching her progress to dissolution, without being in the least able to prevent it. If, however, I had been acquainted with the instrument which has been since invented, I should have used it with the probability of success. This instrument enables us not merely to remove the poison from the stomach, but also to throw in water in considerable quantities, and to introduce stimulating remedies after the opium is removed, for the purpose of restoring the functions of the nervous system; and this in cases where emetics cannot be even swallowed. I certainly do expect the happiest results in such cases from the invention of this instrument. The man who first suggested such an idea deserves well of his country, and they who oppose it until the instrument has been fairly tried and found useless, must be destitute of understanding. Persons who object to a proposition merely because it is new, or who endeavour to detract from the merit of the man who first gives efficacy to a new idea by demonstrating its usefulness and applicability, are foolish, unmanly, envious and illiberal objectors; they are unworthy of the designation either of professional men or of gentlemen.

I will take this opportunity of mentioning to you, that the new medicine—iodine, which is now much employed in enlargements of the glands, in the form of hydriodate of potash, is a very active poison, and you should be very much on your guard in employing it. I witnessed very lately an instance of an over-dose of this substance producing the most violent convulsive symptoms. The quantity of iodine taken was less than that which is often given, but it was an over-dose to this patient. There were forty drops of the tincture in a mixture of six ounces, and he was desired to take three table-spoonfuls three times a day; he had only taken three-fourths of the mixture, when he was seized with the most violent convulsions; his hands, legs, and feet, were kept in constant in-

voluntary motion; and he declared, that during the whole night he resembled a person in the act of fighting and wrestling. Dr. Marcet mentioned to me the case of a lady, on the continent, who destroyed herself by taking this medicine: she thought she could manage it herself; took it for several days, and increased the doses. She was seized with violent vomiting, purging, excessive pain in the stomach, and convulsive symptoms, and in this state she died. It is a dangerous remedy when used internally, and I do not think its merits as an internal medicine are at all equal to those which it possesses as an external application.

I shall proceed to say a few words on the mineral poisons. Arsenic is a poison very commonly taken for the purpose of committing suicide: very soon after this poison is swallowed, the most excruciating pain is felt in the stomach; besides this effect on the stomach it produces excessive vomiting, violent spasmodic contractions of the muscles of the abdomen, twitchings and convulsive motions of the hands. The pain is so horrible, that much as we may lament the want of firmness which leads to the commission of suicide, we deplore still more the suffering occasioned by a poison which produces such excruciating torture as arsenic. A person who has taken a sufficient quantity of arsenic to destroy life, dies about nine hours after having taken it. During that time he suffers the most excruciating agony until within two hours of his death, when his pain is somewhat mitigated; he is then convulsed, his body is perfectly pallid, and covered with a cold perspiration; and his fæces pass off involuntarily. On examination of the body after death, a very large quantity of mucus appears to be thrown out, in consequence of the irritation produced by the arsenic. This is a sort of defence set up by nature, a quantity of mucilaginous matter being produced, which is for a time capable of supporting the oxide of arsenic, so as to keep it from the coats of the stomach. When the quantity is large, the poison penetrates through this mucilaginous secretion, affects the internal coats of the stomach, and produces gangrene. The inflammation, however, is not general, but affects only particular spots. When the poison passes the bounds of the stomach, and enters the duodenum, it still produces ulcerated spots of a gangrenous colour, the inflammation not being generally diffused. If, therefore, you should be called upon in a court of justice to say whether you believe a person to have been poisoned by arsenic, your judgment must be guided by the following appearances:—If the person has died by the effects of arsenic, you will find a large quantity of mucus secreted in the stomach, a part of the arsenic supported in the mucus, and gangrenous spots in the internal part of the stomach. Having found these appearances, and carefully washed out the stomach, it

is better to send the contents to some person who is in the habit of making chemical experiments. A medical man, unless he is a first-rate chemist, ought not to depend upon his own experiments in cases where the lives of individuals may, perhaps, be involved in the decision. He should content himself with carefully collecting the contents of the stomach, and sending them to be analysed by a professed chemist. The dose of arsenic, when it is given as a medicine, is five drops of the arseniate of potash three times a-day at the commencement. This dose may be increased at the utmost to fifteen drops. Few stomachs can bear it to that extent; and, in general, when I give this medicine with a view to the removal of any periodical disease of the intermittent form, I begin with five drops three times a-day, and very rarely increase it beyond twelve drops. The bad effects which this medicine produces after a time, often leads us to regret that we should have employed it at all. It occasions pain in the stomach, a disordered state of the bowels, œdematous swellings in the face, and in the hands and feet, from which it is often a long time before the patient recovers. With respect to the external application of arsenic, you should be very much on your guard in its employment. I remember a patient in the other hospital, who had a fungus in the eye, to which the solution of arsenic was very liberally applied; he complained very much of pain in the stomach, and the result was, that he died of inflammation in that organ. On examination of the body after death, the stomach exhibited the peculiar inflammatory appearances produced by the poison of arsenic. It is a curious circumstance, that if arsenic be injected into the blood-vessels, it kills by producing inflammation in the stomach. There are few subjects which have been less attended to than the disposition that exists in some parts of the body to be acted upon by certain medicines, to the exclusion of other parts. Thus, if ipecacuanha be injected into the veins, it still acts by producing vomiting; if arsenic be injected, it produces vomiting and inflammation of the stomach; introduced in this way, it destroys life in three or four hours, and if in large doses, it will sometimes prove fatal in twenty minutes. If oxymuriate of mercury be injected into the veins, it produces the destruction of life by inflammation, not only of the stomach, but of the intestines; when received into the stomach, it acts both on the stomach and intestine; and when injected into the veins, it acts equally on both. Arsenic produces inflammation of the stomach only, and not of the intestinal canal. Tartrite of antimony and ipecacuanha both produce vomiting, when injected into the veins. It appears, therefore, that you can only influence certain parts of the body, by particular medicines, in whatever way those medicines may be introduced into the circulation. Certain substances have uniformly spe-

cific effects on particular parts of the body; thus cantharides act on the neck of the bladder, aloes on the rectum, and other medicines, which we are in the habit of using, have an influence on one part of the body, to the exclusion of all the rest. This subject is well deserving of attention; it has been but little investigated, and affords an ample field for research and useful discovery. The oxymuriate of mercury is often used for the purpose of destroying life; it produces vomiting and purging, great depression of strength, coldness of the extremities, and death frequently ensues in the course of a few hours. With respect to the means which should be employed with a view of removing the oxymuriate of mercury from the stomach, I will tell you what I believe to be the best remedy to resort to at the moment, for it will often happen that you cannot obtain the best chemical preparations for that purpose. It is well known that the carbonate of potash or soda decomposes this substance. What I should advise you to do, therefore, would be to mix a quantity of soap with warm water, and, making it as thick a lather as you can, give it in large quantities to the patient. I have myself tried this remedy, and my patient recovered, whether *post hoc* or *propter hoc*, I will not decide; but my belief is, that I could not have administered a better remedy than that which suggested itself to me on the sudden, if I had been in Apothecaries' Hall. The alkali of the soap immediately decomposes the oxymuriate of mercury, while the greasy matter sheaths the stomach, and checks the further influence of any portion of the substance which might remain. This, therefore, appears to be the best extemporaneous remedy you can employ in such cases. Diluents should be given to a very considerable extent, as well as the alkali.

It may appear that I am disposed to think too well of the instrument to which I before adverted, when I state that I believe that the syringe may also be successfully employed for the purpose of removing the oxymuriate of mercury from the stomach. I should certainly prefer it to any other means; but instead of using simple water, I should throw in a quantity of soap and water; then withdraw it. I should repeat this operation until the stomach was entirely cleansed. It has been suggested, that although this instrument may be used with success for the removal of vegetable poisons from the stomach, yet it would not succeed in cases of poison by arsenic or corrosive sublimate. This I do not believe. With respect to arsenic, I am aware that, if it were taken in the solid form, and a considerable portion had fallen on the stomach, it would be impossible to remove it; but, as it is usually taken in powder, I think the instrument is very capable of removing it, because it will be for a considerable time, at least, kept in solution by the mucus which is thrown out from the surface of the stomach, and in this state it may be

removed. At all events this deserves a trial. They who suppose that the arsenic adheres to the internal coats of the stomach so that it cannot be removed, have never made any experiments with the oxide of arsenic; it does not adhere to the coats, but it is lifted from them by mucus. With respect to the influence of lead, I have but little to observe. In colica pictonum, where we have an opportunity of observing its effects, no inflammation appears to be produced in the stomach. This disease seems to be entirely spasmodic; it will be right to administer large quantities of castor oil and emetics. I have known persons suddenly lose the use of one side from the effects of lead. I once observed that a boy who was at work at my house, had paraplegia; and I asked him how he came to lose the use of his side. "Why, sir (said he), very foolishly I had some lead in my pocket, as I was going home to my master's, and on the road I bought some gooseberries, and put them into my pocket. I found that the mixtute of lead only made the fruit sweeter; so I finished my gooseberries, and on the following morning I lost the use of my side."

I shall conclude this lecture by shewing you the effect of a powerful poison called ticunas, with which the Indians, in the back settlements of Demerara, arm their arrows. There is a very minute portion of the poison on a stick in this little box, which is sufficient, however, to poison every one of you. I shall insert a small particle, I know not what fraction of a grain, into the cellular tissue of a rabbit, and you will see that, in the space of three or four minutes, the animal will die, without appearing to suffer the least pain. It will probably continue to eat the parsley on the table till it dies.

[The first rabbit on which the learned professor performed the experiment, walked about the table, and partook of his parsley, but declined dying at the end of four minutes. Whether the poison were not effectually introduced within the cellular tissue, or whether this rabbit was blessed with an idiosyncrasy which rendered him insensible to its effects, we will not decide; certain it is, that he continued to eat his parsley with a provoking vivaciousness up to the moment we left the theatre. The learned professor introduced a minute portion of the poison within the cellular tissue of a second rabbit, on which it soon produced the usual deadly effects. It appeared to suffer no pain, but at the expiration of three minutes, its hinder extremities were paralysed; in three minutes and a half it appeared to be insensible, and at the end of four minutes it rolled on its back, and died.]

LECTURE LV.

The subject of this evening's lecture will be the

VENEREAL DISEASE.

There are two poisons communicated by venereal intercourse: one the poison of gonorrhœa, which, falling upon a mucous surface, produces from that surface a discharge of matter which is infectious; the other, the poison of syphilis, being applied to the surface of the skin, or, as far as is known at present, to any surface, produces inflammation and ulceration, forming a sore which is called chancre; the discharge from this, being received into the absorbent glands, occasions bubo, and, being conveyed into the circulation, produces inflammation and ulceration in the throat, on the skin, the periosteum, and the bones.

OF VIRULENT GONORRHŒA.

When gonorrhœal matter is applied to the urethra, the following symptoms generally arise in three or four days after its application:—The patient first experiences a sense of titillation in the urethra, as if a drop of urine were contained in it. This directs his attention to the part; and he finds that the lips of the urethra are red, and that there is a slight mucous discharge. The next circumstances which take place are these: the urethra begins to be affected with considerable heat, and he experiences pain in discharging his urine; this state is called ardor urinæ. The pain increases till it becomes, in many cases, excessively severe: there is an appearance of threads mixed with the urine, which arises from the adhesive inflammation in the lacunæ of the urethra. The next effect is a considerable diminution in the stream, the swollen state of the urethra contracting the size of the canal. The urine is often discharged in two, three, or more streams, in consequence of the contracted and irregular state of the urethra. At first the discharge from the urethra is mucous, but after a little time it assumes a purulent appearance. The matter becomes yellow, and, if the inflammation is very considerable, green; and it is often intermixed with blood, so as to give a sanious appearance to the discharge. You are enabled, therefore, from the colour and appearance of the matter, to judge of the degree of inflammation in the urethra. These are the circumstances which occur with respect to the appearance of the matter. I should observe to you, that, although the appearance of this fluid is purulent, it has not really the character of common pus. If you examine the discharge by the aid of a magnifying power, you will find

that, though there may be some few globules of pus, the greater part of the discharge is mucus. The time this matter will continue to discharge is quite indefinite. It is said that gonorrhœa will wear itself out, but it will sooner wear out the patience of the patient. I have known it continue for months, and I shall have occasion to mention a case in which it continued to be infectious during all that time. It sometimes continues for so long a time notwithstanding all the means which may be employed for its cure, as to be an opprobrium to our art. In no case, however, ought you to rely on the efforts of nature for its cure; for, in general, you may very much expedite the cure by adopting a judicious method of treatment. Besides these external effects on the urethra, gonorrhœa takes also an internal course. It does not confine itself, in its external effects, to the beginning of the urethra, but often produces an erysipelatous inflammation of the glands and frænum, occasioning effusion into the prepuce and phymosis. The absorbent vessels on the dorsum penis often become enlarged and hard, and produce little abscesses, which go on to suppuration. The glands of the groin are sympathetically affected, and in a first gonorrhœa, seldom fail to become enlarged and painful. Where this effect takes place from gonorrhœa, several glands of the groin are affected at the same time; whereas, in the absorption of the poison of syphilis, a single gland only is enlarged on each side. Abscesses are very rarely occasioned by a sympathetic enlargement of the glands of the groin from gonorrhœa; they may almost always be prevented by proper attention on the part of the surgeon. When I say the glands of the groin are sympathetically affected, I am aware that this is not a strictly proper term for this species of irritation, because the swelling undoubtedly arises in consequence of the gonorrhœal inflammation running along the course of the absorbent glands; it is a continuation of the inflammation along the course of the absorbent vessels. With respect to the internal course of gonorrhœa, the effusion in the urethra often proceeds further than the original seat of the inflammation. Swelling and suppuration often take place in the mouths of the lacunæ; matter is very commonly accumulated in the lacunæ, and especially in the lacuna magna, which may be known by a swelling and fluctuation on the sides of the frænum. Irritation and inflammation also take place in the corpora spongiosa, producing that painful state of the parts termed chordee, in which the penis feels as if it were bound down, so as to prevent a complete extension. The penis is sometimes curved, and sometimes turned considerably to one side. The next effect of gonorrhœa is the production of stricture, which is generally seated near the bulb of the urethra, and arises from the diminished diameter of the canal, in consequence of the

thickening of the part from inflammation; another effect is an inflammatory state of the muscles of the perineum, accompanied with great irritation, and violent spasmodic contractions.

The inflammation sometimes extends itself to the spot where the vasa deferentia open at the verumontanum, producing a swelling, which was absurdly called hernia humoralis. When it extends to the prostatic part of the urethra, there is great irritation at the neck of the bladder; the patient is often under the necessity of pressing on the perineum when he makes water, and soon after inflammation of the testicle begins.

Whenever an old fool gets a gonorrhœa, it is generally accompanied with an enlarged state of the prostate gland, and he rarely escapes without experiencing the most excruciating suffering from this cause. It rarely happens that an old man gets this disease without having bitter reason to repent of his folly. The bladder becomes affected, in consequence of the gonorrhœal inflammation; it becomes highly irritable, and the patient experiences a constant inclination to make water. Thus gonorrhœa produces various effects, not only in its external but in its internal course; such as abscesses in the lacunæ, stricture, inflammation of the prostate gland, and irritability of the bladder. It is not so simple a disease, therefore, as you might at first be disposed to imagine. There is no comparison as to the difficulty of getting rid of syphilis and gonorrhœa: syphilis is a disease which a child may generally cure; gonorrhœa is a disease which very often baffles the longest experience, and the greatest professional skill.

Having described to you the symptoms of gonorrhœa, I shall make a few general observations on the disease, before I proceed to speak of the treatment of it. In the first place, what is the time in which it appears after connexion? The usual limit is from four to seven days; it is seldom under four, and very rarely exceeds seven days. I have known it, however, occur within twenty-four hours after connexion; and sometimes a fortnight, or a longer time, will elapse before it appears. I have known an instance in which it was delayed for fourteen weeks, in consequence, I believe, of the general indisposition of the patient. The cause of gonorrhœa is undoubtedly inflammation of the lacunæ of the urethræ, and particularly the lacuna magna. You will have an opportunity of seeing the state of the lacunæ under this inflammation, in the injected urethra, in two different preparations. The inflammation is of the erysipelatous kind, but there is no appearance of ulceration. If ulceration were produced, the membrane of the urethra would soon give way. It is merely a secretion from the mouths of the vessels; ulceration does occasionally take place in the lacunæ, but not

in the urethra itself. When the inflammation runs high, it extends down to the bulb of the urethra.

Many years ago, I had an opportunity of examining the urethra of a man who was executed, and who had gonorrhœa at the time of his execution. The inflammation had extended down to the bulb of the urethra; for an inch, or an inch and a half down, the urethra was exceedingly red, and there was some effusion of matter on the internal surface; the urethra was red at the bulb, but not of so deep a colour. The inflammation, therefore, is not confined to an inch, or an inch and a half down the urethra, but often extends over the bulb of the urethra, and in this way produces strictures. In the case to which I allude, the gonorrhœal inflammation had extended at least seven inches down the urethra. In general, on examination of a subject who has died under gonorrhœa, you will find a small quantity of purulent matter at the extremity of the penis, and inflammation extending about an inch and a half down the urethra, which if exposed to the air for twenty-four hours, assumes a florid redness. With respect to the manner in which this disease is performed, I have heard some very curious and laughable disquisitions on this subject, by persons who prefer entering into such speculations to making observations for themselves. There can be no doubt that the disease is produced by the direct application of the poison to the lips of the urethra, for you will find that the first symptom which takes place is a pouting state of the lips of the urethra, arising from inflammation. The lips are first attacked, and the inflammation gradually extends itself to the internal surface of the urethra; the disease begins from without, and extends itself to the internal surface. So much for the manner in which the poison is received. We find that the discharge from gonorrhœa is very much affected by constitutional causes. A man shall have an abundant discharge from the urethra, considerable pain, and even chordee; and if he should get a fever, the discharge disappears, the pain ceases, and he will be entirely free from all symptoms of the disease for a period of from seventeen to twenty days. As soon, however, as he begins to recover from his fever, the discharge of matter will be removed, the pain and chordee will return, and a long time may elapse before the disease can be removed. These constitutional causes suspend the action of gonorrhœa, but the symptoms will return as soon as the constitutional irritation ceases. You will generally find the cure of gonorrhœa difficult in proportion as the constitution of the patient is disposed to strumous affections. If a patient has pimples in his face, enlargement of the glands of the neck, a thin delicate skin and irritable fibre, you may expect to have great difficulty in curing him of gonorrhœa. I shall now proceed to speak

Of the Treatment of Gonorrhœa.—The treatment of gonorrhœa is founded on two principles; the disease may be either treated simply, by diminishing inflammation, or it may be treated by producing a change in the action of the part, by which the disease is removed in a short period. These are the two principles on which surgeons act in the treatment of gonorrhœa. In the first place, gentlemen, let me observe to you, that no greater folly, and indeed cruelty, can be committed, than that of giving mercury to patients, for the cure of this disease. A man who gives mercury in gonorrhœa, really deserves to be flogged out of his profession, because he must be quite ignorant of the principles on which this disease is to be cured. To give mercury to a young and irritable person, who is probably constantly exposed to vicissitudes of temperature, for a disease which does not require it, (thus exposing the health, and even the life of the patient to danger) is, in the present state of our knowledge, perfectly unpardonable. It is lamentable to reflect on the number of lives which must have been destroyed by phthisis and otherwise, in consequence of the imprudent exhibition of mercury for a disease which did not require it, which prevailed among the older surgeons. At the present time, however, a surgeon must be either grossly ignorant, or shamefully negligent of the duty which he owes to the character of his profession, and to the common dictates of humanity, if he persists in giving mercury for this disease. Let those persons who suppose that gonorrhœa can be cured by mercury, go round our wards, and see whether mercury has any effect on that disease. Look, gentlemen, at 100 patients in our foul wards, many of whom come into the hospital with syphilis and gonorrhœa; and many, I am sorry to say, who have only gonorrhœa, but who are invariably carried to these wards. What is the miserable treatment of these patients? You are aware, gentlemen, that I scarcely ever enter the foul wards of the other hospital;—when a particular case demands my attention, I have the patient removed to a clean ward. I will tell you why I do not enter those wards, gentlemen. I abstain from entering them, because patients under gonorrhœa are compelled to undergo so infamous a system of treatment that I cannot bear to witness it. To compel an unfortunate patient to undergo a course of mercury for a disease which does not require it, is a proceeding which reflects disgrace and dishonour on the character of a medical institution. No consideration shall induce me to repress my feelings on this subject; no authority shall restrain me from giving full expression to those feelings. As long as I continue a surgeon of Guy's Hospital, I will endeavour to do my duty; but I care not whether I continue a surgeon of that hospital another day. I do say that the present treatment of patients under gonorrhœa in these hospitals, by putting them unnecessarily

under a course of mercury for five or six weeks, is infamous and disgraceful. The health of a patient is, perhaps, irremediably destroyed by this treatment; and, after all, not the slightest effect is produced by it on the disease. If he is cured of his gonorrhœa at all, he must be cured by other means. If you go to a patient for gonorrhœa in the foul wards, at the end of his course, and ask him how many times he has rubbed in, he will generally answer, "twenty-eight times." If you ask whether he is salivated, he will tell you that he spits three pints a day; but ask him whether his gonorrhœa is cured, and he will reply. "No, I have a clap still upon me." His disease is not in the slightest degree affected by the mercurial course to which he has been so unpardonably subjected, and it will soon after be necessary to cure him by injections or other means. When so infamous a practice prevails, I cannot satisfy my own feelings by resorting to milk-and-water language; every man of common feeling and honesty is bound to speak out on such an occasion. It is wholly unnecessary to give mercury in any form for this disease. When a patient applies to you for a first clap, it seldom happens that he can be cured by the same means which may be successfully employed in subsequent claps. The first clap is generally much more difficult to cure than those which subsequently occur. I shall proceed to state to you the result of the experience which I have had in the cure of this disease, for thirty-three or thirty-four years.

If I have not yet learnt the best mode of treating it, I have no hope that I can know any thing more on the subject. I will state to you the plan which I have found to answer better than any other: without meaning, however, to say, that this plan is better than those which may be adopted by others. When the patient applies to you for his first clap, there will be generally a great deal of inflammation, and I advise you to give the sulphate of magnesia with the infusion of senna. An ounce of the sulphate of magnesia may be mixed with six ounces of the infusion of senna, and three table spoonfuls given two or three times a-day, so as to purge the patient very actively. You may afterwards give the submurias hydrargyri with extract of colocynth, but merely as a purge; for if it were to act as a mercurial, I would not give it at all. There is no necessity for giving calomel, unless you wish it to act on the liver, as well as on the intestinal canal. Having purged the patient very freely, you will direct him to take diluting drinks, of which he can hardly take too much. Two drachms of the carbonate of potash, or the subcarbonate of soda, should be taken in a quart of some diluting drink in the course of a day; capillaire, or tea, will answer this purpose very well; some advise the gum of acacia, but whether it does any good or not, I do not know. I have found the liquor. calcis a very excellent diluent in this

disease. Soda water is often useful, but it must be ascertained whether it produces irritability of the bladder; for, in some persons, it increases, instead of diminishing, irritability. If it increases very much the inclination to make water, it should not be persisted in; if it does not produce this effect, it is a very excellent diluent. The penis should be suffered to hang for a considerable time in warm water, which will relieve the inflammation, and produce nearly all the good of a warm bath. When the ardor urinæ and pain from chordee is very severe, twenty drops of the liquor. potassæ, with from three to five grains of the extract of conium, in the mistura camphorata, may be given with considerable advantage. This is the plan which you should pursue during the first week. You may then apply lint dipped in the liquor. plumbi subacetatis dilutus, to the part. Do not use an injection in the first instance, but pursue the plan I have pointed out to you during the first ten days. At the end of this time, when the inflammation has in a great degree subsided, you may begin by giving the patient the balsamum copaibæ. An ounce of the balsam may be mixed with an ounce of the mucilage of acacia, and four ounces of the mistura comphorata, and a table spoonful given morning and evening. Having given this mixture for two days, the discharge will be very considerably diminished, and you may then order an injection of the liquor. plumbi subacetatis dilutus. This is the mode, gentlemen, in which gonorrhœa, as far as I know, is to be cured in the safest and most expeditious manner. In the third week I continue to give the balsamum copaibæ; and the best injection which can then be employed, is the liquor. plumbi subacetatis dilutus, with the sulphate of zinc.

℞. Sulphatis zinci, gr. vj.
Liq. plumbi subacet. diluti, ℥iv.

By this plan you will generally succeed in curing a gonorrhœa safely and expeditiously. If, instead of using an injection, you suffer the discharge to run on, week after week, you will be almost sure to lay the foundation of stricture.

If a patient apply to you for a second or third clap, you will not proceed in this way, but give him the balsam of capivi immediately, which will, in general, put a speedy stop to the discharge. The inflammation of a second clap is comparatively slight, and, in general, it will only be necessary to give the balsam copaibæ for a week, and then begin with the injection of the liquor. plumbi subacetatis dilutus, and the sulphate of zinc. In a first clap it is better to begin with the liquor. plumbi subacetatis dilutus in the first instance, because this is less irritating, and afterwards use it in combination with the sulphate of zinc. The treatment which is necessary to subdue inflammation in a first clap is,

in general, entirely unnecessary in subsequent claps. Various other injections are employed in the treatment of the gonorrhœa; half a grain of the sulphate of copper in an ounce of rose water is a powerful injection; a solution of the oxymuriate of mercury makes a very irritating injection, if of any strength, and should not be resorted to in the first instance. It is used in the proportion of one grain to twelve ounces of distilled water. You should feel your way in the use of irritating injections; if they produce much inflammation, you should suspend the use of them; and if, on the other hand, they excite no pain at all, you may gradually increase their strength. Do not continue the use of the same injection, if it does not answer the purpose very quickly; for you will otherwise be only laying the foundation of stricture. It is much better to vary your injection, than to persist in the use of the same injection, if it does not very speedily put a stop to the discharge. It will often happen that a patient will continue for a length of time under the hands of his surgeon without getting rid of the discharge. If a patient should come to you under these circumstances, what I recommend you to do, is to begin immediately the use of bougies with injections. The use of bougies will increase the discharge for a time; but, being combined afterwards with the use of an injection of the sulphate of zinc, will generally succeed in effecting a cure. With respect to the number of times the patient should inject, three or four times a day will be quite sufficient. As to the strength of the injection, it should be increased so as to produce a slight degree of irritation; but it is better to vary the injection, than to increase its strength in any great degree. There are other means of curing gonorrhœa, by producing a change in the action of the urethra, as, for instance, by the use of cubebs. I remember the time when this remedy was much ridiculed, but there is now no surgeon of the least experience who does not acknowledge that it is a very powerful remedy in this disease. The value of this remedy may be known by applying to any merchant with respect to it. A short time ago it was introduced into this country in very small quantities; but now, such is its acknowledged efficacy, that whole shiploads of it are annually brought into the port of London. I do not say that it would be advisable to employ this remedy at once for a first gonorrhœa, where the symptoms of inflammation run very high in a young and irritable person; it is better not to begin with the use of it until a week or ten days have elapsed, and the inflammation is considerably reduced. I will tell you how I first learnt the value of this remedy: a gentleman from Java, who had lived for some time in Batavia, entered my room, and, unbuttoning his clothes, immediately showed me the part about which his mind was uneasy, and asked me whether I thought a sore upon it was

venereal? I said, certainly not. He said he was glad to hear it, for, if it had been a chancre, he should have supposed that it had been produced by his curing a gonorrhœa very suddenly. He was running away very hastily, when I requested him to tell me how he had cured this gonorrhœa so suddenly. "Why, (he said), by cubebs." "Cubebs! (said I), what is that?" for I had really at that time never heard of such a thing. "Why, (said he), it is a species of Java pepper, and, if you like, I will send you a bottle of it." I said I should be obliged to him. He accordingly sent me a small bottle of it, which I put into my desk, where it remained, without my thinking any more of the circumstance. Two or three months after, he came to me again, and said that as he had had a severe genorrhœa, he should be obliged to me, if I had any of the cubebs left, to let him have a little of it. This was on a Thursday: I gave him the bottle, and after examining this gonorrhœa, which was very severe, I requested him to let me see him on the following Monday. He came to me on that day, and the discharge was quite gone. This excited my attention, and I began to think that it must be a medicine of great power. Very soon after, a gentleman came to me, and said that as he was going to give a very large dinner party, and should be obliged to drink a good deal of wine, he wished to be cured of a clap immediately. I told him I could not promise to do any such thing, but, if he liked, I would give him a remedy, which a gentleman from Java had used with great success; and I then related to him the circumstance which I have just mentioned. The gentleman said he would try it, and he should prefer it to the balsam of capivi; of which the people in his house knew the smell. (*A laugh.*) He began taking two drachms three times a-day on a Tuesday, and on Wednesday week after, the discharge not having entirely disappeared, he called on me to know whether he might take wine the next day, when he was to give his dinner-party. I told him I saw no objection to it, and the effect of the wine he drank on that day, added to the cubebs, completed his cure, for the discharge did not return afterwards. Cubebs appears to produce a specific inflammation of its own on the urethra, which has the effect of superseding the gonorrhœal inflammation. They who have tried cubebs, and do not acknowledge its value, as a remedy for gonorrhœa, cannot have made any accurate observations on the subject. It is a remedy of a most admirable and useful kind, and may be given with advantage even in the inflammatory stages of gonorrhœa, provided the inflammation does not run excessively high. It is a most useful remedy also for the cure of gleet, as it is called, where gonorrhœa has continued for a great length of time. In the very early stages of gonorrhœa, when the inflammation is just beginning, it often succeeds in removing the

disease in a very short space of time. I have one more observation to make with respect to this remedy, namely, that the greatest advantage may be derived from combining its use with that of the balsam of copaiba. An ounce of the balsam of copaiba, an ounce of the mucilage of acacia, and two drachms of cubebs, in four ounces of the mistura camphorata, make an admirable mixture when the balsam of cobaiba alone is beginning to lose its effect. Such, gentlemen, it appears to me, is the mode of treating gonorrhœa, which will best contribute to the maintenance of your own professional character, and to the welfare of your patients.

LECTURE LVI.

In this evening's lecture, gentlemen, I shall call your attention to some of the *consequences of gonorrhœa*, and first of

STRICTURES OF THE URETHRA.

These are of three kinds—the *permanent*, *spasmodic*, and *inflammatory*.

The *permanent* stricture is the result of a thickening of the urethra from chronic inflammation; the *spasmodic* arises either from a contraction of the muscles surrounding the urethra, or from the urethra itself; the *inflammatory*, in consequence of inflammation of the acute kind, which generally succeeds the acute gonorrhœa. This inflammation occasions an extravasation of adhesive matter between the corpus spongiosum and surface of the urethra.

At the commencement of the formation of every permanent stricture, you are made acquainted with the real nature of the complaint by the following symptoms:—The first is, the retention of a few drops of urine in the urethra, after the whole appears to have been discharged; so that when the penis has been returned into the small clothes, the linen becomes slightly wetted, and if you press on the under side of the urethra, a few drops more will be voided, which had collected between the neck of the bladder and that part of the urethra where the stricture is situated. The next circumstance you notice is an irritable state of the bladder; this is evinced by the person not being enabled to sleep so long as usual without discharging his urine. A man in health, will sleep for seven, eight, or nine hours, without being obliged to empty his bladder; but when he has stricture, he cannot continue for a longer period than four or five hours, and frequently much less even than this. The next circumstance observable is the division of the stream, the reason of which is that the urethra is in an uneven state from the irregular swell-

ing which surrounds it, and consequently the urine is thrown with an inequality of force against its different sides: sometimes the stream splits into two, becoming forked; sometimes it is spiral; at other times it forms, as it were, a thin sheath. Occasionally the stream rises perpendicularly, its long axis being at right angles to the long axis of the penis; thus, then, the retention of a few drops of urine after the whole appears to have been discharged, a more frequent propensity to make water than when in health, and the peculiar characters of the stream, as just described to you, will be conclusive evidence of the existence of stricture. In addition, there will sometimes be a discharge from the urethra, which renders the linen of a bluish-white, similar to the appearances produced by nocturnal emissions: if the individual rides much on horseback, the urine will be high-coloured, depending upon the degree of excitement existing in the urethra. The next thing which the patient notices is, that he discharges his urine by drops; and, from the irritable state of the bladder, the water is constantly dropping or distilling away from the orifice of the urethra. An individual, then, having permanent stricture, first observes a few drops of water remain after the whole seems to have been discharged, then notices a fine spiral or divided stream, and lastly, discharges his water by drops only: in this last state, for the purpose of facilitating the escape of the urine, and preventing its being retained by the lacunæ of the urethra, he draws out the penis with considerable force; and thus, to express it in the clearest way, milks himself.

Well, the next circumstance you observe is the discharge of a considerable quantity of mucus along with the urine; this is owing to the inflammation having extended to the mucous membrane of the bladder; the urine, when discharged, is as transparent as usual; but when it has cooled, the mucus descends to the bottom, where it appears ropy, and adheres to the vessel. As the inflammation of the membrane increases, the urine becomes yellow; but, if heated, the yellowness is not seen; and, when allowed to stand, as I before stated, the mucus will sink to the bottom. These facts will explain to you whether the urine contains mucus or pus. When the disease is of a very aggravated nature, the urine will become quite white; but, in all the stages of the complaint, the colour of the water will be according to the degree of inflammatory excitement; and, when very severe, it will be charged with a considerable quantity of pus. When the urine is bloody, it is a proof that the ulcerative process has commenced; and if there be no blood, it is a proof that there are no ulcers.

In that state of stricture, when the urine is loaded with pus, the patient has frequent and severe rigors, or, even below that state of inflammation,

the person will have frequent shivering fits; and upon going into his room, you would suppose that he had an intermittent, and would order him bark. In these cases, however, this medicine has no effect, and you will find opium the remedy. I mention this that you may be upon your guard in those cases, as they are manifest rigors succeeded by severe heat, although they do not come on with that regularity that they do in intermittents, nor at the same time of the day. In addition to these symptoms, piles will be sometimes produced, and occasionally direct inguinal hernia; this last complaint is the consequence of the extreme force that is employed to evacuate the urine.

Upon the dissection of those who die of stricture, (and I think persons not unfrequently die of this complaint, though not so many now as formerly), the following circumstances are observed:—The seat of the stricture anterior to the bulb, just where it joins the corpus spongiosum—this part is naturally contracted and small, and it is here that you will be obstructed, if you attempt to pass a straight bougie. The next situation in which we find stricture, is in the membranous portion of the urethra, or that part between the bulb and prostate gland: the next situation is in the prostate gland itself. There is no part of the urethra which is not liable to stricture, but most frequently it is found in the three situations I have described to you. First, just at the beginning of the bulb; second, at the membranous (or as it ought more properly speaking to be called, the muscular) part; and, thirdly, in the prostate gland itself.

Well, upon proceeding on our dissection, what we find to result from stricture of the urethra is extraordinary dilatation of the urethra itself behind the stricture. Here (holding up a preparation) you have an opportunity of seeing this fact. The stricture, you observe, one inch from the extremity of the penis and the urethra, has become so much enlarged, that it will receive the finger between the bulb and seat of stricture. The next circumstance we observe, upon dissection, is an enormous thickening of the coats o the bladder; this arises from the increased action which the muscular fibres have to undergo; for, the urine being frequently discharged, the muscular fibres contract to produce the expulsion, and thus increase in size, in consequence of their increased action. Thus, then, recollect that in strictures the bladder is thickened and irritable.

Well, then, the next thing we observe is enlargement of the urethra; and this is owing to the urine collected in these tubes, from its not finding a ready passage into the bladder; therefore, the ureters themselves become bladders.

Proceeding in our dissection, we often find the kidneys diseased,

and their glandular structure entirely absorbed; and it not unfrequently happens, that strictures will produce disease in the kidneys, which disease will prove destructive to life. In stricture, diseased kidneys prove advantageous, in one point of view, which is the diminution of the secretion of the urine: if this, however, continues for any length of time, the constitution will sink from the non-excretion of that fluid: one kidney is generally more affected than the other. I have just stated to you, that the glandular structure is sometimes entirely absorbed, and the kidney is occasionally, in cases of stricture, so distended with urine, as almost to answer the purpose of a bladder. Well, such are the appearances found upon dissection of those who die of stricture.

Ever since I first began to lecture, I have always denominated that stricture of the urethra which is produced, as it were, by a piece of cord tied round it, the corded stricture. Another, that is produced as if by the tying of a broad band, the ribbon stricture; for it frequently extends a considerable distance, even the entire way from the bulb to the prostate. There is another species of stricture, occasioned by a membranous band running across the urethra.

[Preparations, showing these varieties, were handed to the students, and passed round the theatre.]

THE CAUSE OF PERMANENT STRICTURE OF THE URETHRA is inflammation of the chronic kind: this occasions a greater determination of blood to the part, and produces a deposition of adhesive matter on the outer side of the urethra; the urethra itself becomes thickened, which, together with being pressed upon by the adhesive matter collected in the interstitial spaces surrounding the urethra, produces the stricture in question.

As to the manner in which stricture is produced, I am opposed, on this point, to Mr. Hunter, one of the greatest surgical authorities that ever lived; and, if asked what was the cause of stricture, I should say, in ninety-nine cases out of every hundred it was the result of gonorrhœa It is quite true that children, on whom not the slightest suspicion of their having gonorrhœa could fall, occasionally have stricture. I have lately met with a case of this description, and it was caused by the child having received an injury when on horseback; but still I would say, that in ninety-nine cases out of every hundred, stricture is the result of neglected gonorrhœa, riding or drinking hard, or any excess when the patient is labouring under that complaint.

Treatment of Permanent Stricture.—There are three principal objects to be attended to: the first of which is, to cure the complaint by

dilatation; the second, absorption; and the third, to destroy it altogether. The first is effected by mechanical means; the second, by the influence of medicines; and the third, burning it away by means of caustic. The first, or cure by dilatation, is accomplished by means of bougies; these are of various sizes, and made of either wax, elastic gum, catgut, or silver; catheters are also sometimes employed, and answer the purpose tolerably well.

Now, with respect to wax bougies, before introducing them into the urethra, you should always warm them by the fire, for the purpose of rendering them soft, when, if they are introduced into the urethra, and pass through the stricture, you will ascertain the distance at which it is situated from the orifice, and the form and size of the stricture will be modelled on the bougie. You then pass another bougie, a little larger than the first; and, directly that is withdrawn, another size, still larger. On the following day you again introduce two bougies, that is, if there should be no existing inflammation to prevent it; the first bougie you then use, is to be of the same size as the one which you concluded on the previous day; after this has been withdrawn, you again pass another, a size larger than the first; thus using on every occasion two bougies, always beginning with one of the same size as that with which you had concluded on each preceding occasion. By adopting this plan, strictures may be cured in a quarter of the time that they usually are, and the strictured part of the urethra speedily made to regain its natural size. Bougies have been numbered from one to sixteen, so that surgeons may on each occasion know the size they are using, and the size they last used: number sixteen is large enough for a walking stick, and evidently too big to be safely passed into any urethra; and number fourteen is of quite sufficient magnitude to establish the natural passage of any urethra. It is not necessary to leave in the bougie any length of time; for, when the bougie has passed the stricture, the effect of dilatation has been produced.

Never attempt to pass a bougie in its straight state; for, if you do, it will be obstructed in its passage, whether there be stricture or not; you should invariably give it, before its introduction, the curve of the catheter: with regard to elastic gum bougies, they are not employed.

Every surgeon, I believe, has a mode of practice peculiar to himself; the bougie I use is made of silver; it is of the form of the catheter, but at the point, and running back for some distance towards the handle, it is conical; and the way I use it is this: I first pass down, in the manner described to you, a wax bougie, for the purpose of ascertaining the form, size, and distance of the stricture. Having obtained a knowledge of these, I then introduce my conical silver bougie, the point

of which having entered the stricture, the further it passes the greater is the dilatation produced, in consequence of the form of the instrument. This bougie I have found extremely serviceable, and is the best with which I am acquainted; when it is not at hand, I use a common silver catheter instead.

As to cat-gut bougies, they are now very rarely employed, except when the stricture is particularly small, and then they are sometimes required. There is another kind of bougie, made of horse-skin, after it has been submitted to the action of lime, to prepare it for tanning.

Fashion, I am sorry to say, in surgery, as well as in medicine, frequently leads practitioners from the path of prudence. One remedy after another is blazoned forth to the world, to delude merely for a day, and then to sink with its predecessors, into "the tomb of all the Capulets." Surgery, however, is much less liable to these deceptions than the medical branch of our profession, because surgery is a science requiring more solid information, and in which impositions are much more easy of detection. It often occurs that the exaggerated statements which accompany new remedies, lead surgeons to expect more advantages from their employment than the experience of the discoverer, if he had spoken truly, would have led them to anticipate. Now, in consequence of this, medicine often sinks below that level where their intrinsic value would justly entitle them to remain. I make these remarks in reference to the use of caustic for the cure of stricture, originally adopted by Mr. Hunter, afterwards improved upon by Sir Everard Home, and, subsequently, the mode of treatment was altered by another gentleman, now deceased: and, since his time, it has been falling into disrepute. The use of caustic has certainly been very much abused, and, in many instances, has produced the very worst consequences, and I would say that it never ought to be employed, except where the stricture is accompanied with fistula in perinæo, and that fistula behind the stricture; then there can be no apprehension of the caustic occasioning retention of urine, which it has done in many instances, when injudiciously employed. Caution is necessary in the use of nitrate of silver, to prevent its getting in contact with any other parts than where its presence is absolutely necessary; and let me advise you not to use the caustic alkali as a substitute for lunar caustic; it is much too soluble, and, by running over an extended surface, is calculated to produce a great degree of inflammation. I have known eight applications of the lunar caustic completely succeed in curing stricture, when every other means had failed; in this case there was a fistula in perinæo behind the stricture.

I have now to make two or three observations on the consequences of introducing bougies: here is a preparation (holding it up), in

which you see the bougie forced out of the urethra into the scrotum, just by the bulb; here is another preparation in which the bougie was forced into the bulb itself. Now, whenever you suspect a tear of the urethra in passing a bougie, immediately withdraw the instrument, and desire the patient, if possible, to retain his urine, that it may not irritate the wound, and also to prevent its escaping through the opening, and becoming extravasated in the surrounding cellular substance. In this way you give time for a clot of blood to form over the surface of the wound—a slight degree of inflammation is excited, and it becomes healed by the adhesive process, without any further mischief. Another circumstance I wish to mention to you is, that the passing of a bougie is sometimes attended with very considerable hemorrhage from the urethra. A practitioner once called upon me in a great hurry, but whose name I will not mention, for I do not wish to hurt him, although he is not at all calculated to practice surgery; well, this person called upon me, and requested me to go immediately and see a patient of his, who had a profuse bleeding from the penis, occasioned by the introduction of a bougie. I went and found as he had stated; I pressed a roller upon the perineum, which instantly checked the flow of blood. A short time afterwards I was sent for to the same patient, from the hemorrhage having returned; this gentleman had been lounging before the fire, with a foot on each side of the chimney-piece; the warmth coming in contact with the perineum, had brought on a renewal of the hemorrhage. I now made an incision upon the part, and divided the artery of the bulb; this operation completely succeeded, and the bleeding was permanently subdued.

LECTURE LVII.

The first subject of this evening's lecture will be

ABSCESSES IN THE LACUNÆ OF THE URETHRA.

After the violence of the gonorrhœal inflammation has subsided, you frequently feel along the under surface of the urethra a number of small knotty tumours; these, in the course of a short time, successively discharge themselves into the urethra, and the swellings then subside. Sometimes these little abscesses break externally to the urethra, thus forming a double swelling; but the most frequent situation of abscesses of the urethra from gonorrhœa, is in the lacuna magna, opposite to the frænum. These abscesses likewise form between the lacunæ and scrotum. When you feel an abscess moving about in the scrotum, and that abscess occurring after the inflammation attending gonorrhœa, you may

be pretty sure that it has been formed in the lacunæ, opposite the scrotum, and will prove troublesome to the practitioner, and dangerous to the patient; for, in this situation, abscess will frequently form, until the patient sinks under the long continuance and severity of the disease.

The next situation in which we find abscesses that are produced by the same cause is in the perinæum, giving rise to swellings there of considerable magnitude: the inflammation passes down the urethra, giving rise to great pain in making water, and still greater pain after having passed it. If the inflammation be not checked in its progress, it will give birth to these abscesses, which, if permitted to remain, will, at length, break through the integuments, and matter and urine will be discharged through the opening. The passage leading from the external wound to the internal is exceedingly tortuous, so that upon introducing a probe, that probe will not directly enter the urethra; indeed, you will find some difficulty in getting it there, from the winding and irregular course of the canal which the matter has formed: the nature of the wound will at once show you that the urine may easily become extravasated into the cellular membrane of the neighbouring parts. Abscesses of this description will sometimes give rise to retention of urine: a man thus circumstanced was brought into the other hospital: upon passing the catheter, I felt something unusual while introducing it, which led me to examine the perinæum; I there found one of these abscesses, and, opening it with a lancet, gave the patient immediate relief. This, then, will prove one source of retention of urine, and it is caused by the pressure which the abscess makes upon the urethra.

The further extension of the inflammation will be the means of producing abscesses in the follicles of the prostate gland; these likewise will occasion retention of urine, and, upon introducing a catheter to relieve this, it occasionally occurs that the catheter will enter an abscess, and a considerable quantity of matter will pass through it before any urine makes its escape; at length, after the whole of the matter has been evacuated, the cause of the retention having been removed, the urine can then be freely expelled from the bladder. It now and then occurs that the two last varieties of abscess I have mentioned, by being neglected, have led to the formation of fistula in ano; the true character of the fistula will be learnt by observing that there run from it at different periods a few drops of urine; this will, of course, convince you it is connected with the bladder.

Treatment.—Abscesses of the lacunæ of the urethra arising from gonorrhœal inflammation should be continually poulticed until the matter is discharged. After you are satisfied that it has once formed, it is not right to let the abscesses break of themselves. When, there-

fore, the hard knot that you feel in the urethra becomes converted into a fluctuating tumour connected with the skin covering it, the sooner you open it the better. When the abscesses are situated in the lacunæ opposite to the scrotum, the treatment must be exceedingly prompt; for if it be not, you will endanger the life of the patient. Into these abscesses make early and free incisions; let your incisions be of considerable size, and a great deal larger externally than internally. I generally make these incisions in the middle of the septum, at the anterior part of the scrotum. Now, when you are called to cases of abscesses in perinæo, it is necessary that you should be particularly decisive in your management of these complaints, for the purpose of guarding against that troublesome and dangerous disease, fistula in perinæo; for, owing to a variety of circumstances, it is extremely difficult to cure. When called to a case of abscess in perinæo, the best plan of treatment that you can pursue, is immediately to introduce a catheter, made of elastic gum, (which is much less likely to injure the patient than a metallic one;) this will relieve the retention, and obviate much irritation; apply leeches and evaporating lotions to the swelling, and keep the bowels open by cooling laxatives. Well, if these measures should not succeed in dispelling the tumour, the moment that you can distinctly feel fluctuation, you should make such an opening with the lancet as will allow the matter to escape, to prevent its burrowing the skin, and producing additional mischief: it will save the patient much pain, and will probably lead to the speedy cure of the disease, which might otherwise prove not only protracted, but fatal. Remember, you are not only to open the abscess early, but keep introduced in the bladder an elastic gum catheter. An abscess of this description, very much neglected, has been known to break into the rectum, and the urine to be afterwards discharged through the unnatural course. In the treatment of abscesses of the lacunæ of the urethra and perineum, it is of the utmost importance that you should attend to the state of the patient's general health; for these abscesses often form in broken constitutions, and it is impossible that you can cure them while the system is in a depraved and debilitated state; you should, therefore, prescribe alterative tonic medicines, nutritive diet, and country air; attention to the state of the constitution will sometimes cure these abscesses, after every local remedy has failed.

Abscesses of the perinæum are often produced from the unskilful manner in which catheters and bougies are sometimes introduced, and by using bougies of too large or too small a size.

There are some cases of strictures so bad, so obstinate, that, use what instrument you will, and with all possible care, yet you will not succeed

in overcoming the resistance. You must recollect the case lately in the other hospital, where I was under the necessity of cutting down upon a stricture, and immediately behind which was a urinary calculus; upon searching a little further I found a second, and then the catheter passed with ease into the bladder.

Well, I mentioned to you, at another part of the lecture, that urinary fistulæ in ano sometimes exist, and that the introduction of a catheter into the bladder is not sufficient to cure them, as the urine will, notwithstanding, still continue to escape by the sinuous opening. Urinary fistula in ano is fistula in perinæo and fistula in ano blended. The first case of the kind that I ever saw, was in a gentleman from Kent; two surgeons attended him, one of whom was myself. The other surgeon injected the sinus; the patient was directed frequently to introduce a catheter: he came to town a short time afterwards, and told me that he continued to pass the catheter for six weeks, when, concluding that he was cured, he ceased to employ it. The urine, however, returned by its former course, and he again came to town for the purpose, if possible, of getting the unpleasant disease cured. What I did, was to make the same incision in the perineum, as is made by the lateral stone operation: my object was to divide the sinus into two; this succeeded in producing a complete cure.

The next subject to which I shall direct your attention, is

EXTRAVASATION OF URINE FROM BURSTING OF THE URETHRA.

This can never happen without the grossest neglect on the part of either the medical man or the patient, unless, indeed, the patient be in a situation where he cannot obtain medical assistance; as individuals, for example, on board ships that do not carry surgeons. It is a very dangerous complaint, and one that is always to be dreaded. I wish there was some legislative enactment to compel the commander of every vessel going a voyage of any distance, to take a surgeon with him. If such a law were in force, we should see very few cases of this description, for the subjects of them are generally unfortunate sailors, who have been so situated that they were incapable of procuring medical advice. You may see these poor fellows often brought into the hospital in the most horrid condition from rupture of the urethra, and the escape of the urine into the cellular membrane of the surrounding parts; the scrotum, in these cases, is of a purple colour, and extremely distended. You probably make an incision in the scrotum, for the purpose of discharging the urine: sometimes this will be successful; but, at others, the entire scrotum will slough, together with a considerable portion of

the surrounding parts: nor is this always the worst that happens, for it frequently terminates in death. All these calamities might have been prevented by proper treatment; and when you see a case of this description, you should immediately make into the scrotum an incision of at least two inches in length: this incision should be in a direction upwards, and backward towards the nates; this opening will permit the urine to escape, and the irritation and inflammation which commonly take place, would be, by this simple practice, completely obviated. This, then, is the method you are to adopt:—make a free incision, for the purpose of allowing the extravasated urine to flow out; attend to the stricture which was the cause of the accident, and your patient will stand a fair chance of recovery. Where patients have surgical attendants, I again repeat, that this accident ought never to occur. I shall now say a few words to you respecting

SPASMODIC AND INFLAMMATORY STRICTURES.

The spasmodic stricture is usually, I believe, more or less connected with permanent stricture; and I am of opinion that the spasms commonly attack the muscular part of the urethra. Spasmodic stricture may arise from various causes, and attacks individuals of all ages: so recently as yesterday, I saw a little boy, of only four years of age, the subject of it. Common accidents, as fracture and dislocation, will sometimes give rise to spasmodic stricture; even an operation for aneurism will generate to such a degree of irritation as to produce it.

Spasmodic stricture is generally unattended with pain. I mention this the more particularly, because the inflammatory stricture and the spasmodic have been confounded; whereas, the one being unaccompanied with pain, and the other having it distressingly severe, is surely sufficient to mark the diseases as completely distinct: even an irritated state of mind, or a mind deeply engaged in study, will occasionally influence the nervous system to such a degree, as to produce spasmodic stricture of the urethra. This complaint usually comes on of a sudden, is unmixed with pain, and the first notice that a patient has of it is, that he experiences a difficulty in voiding his urine.

Treatment of Spasmodic Stricture.—You should introduce a bougie, letting it steal gently along the urinary passage; and when it arrives at the strictured part, there let it rest for a short time; after this, you should gradually push it forward, using only a very slight force, but continuing that force until you have succeeded in passing the stricture. Let the bougie rest for a minute or two in the strictured part, and then withdraw it; directly that you do so, the person will be enabled freely to pass his urine. If you have not a bougie at hand, you may employ a

catheter, and it will answer equally well; you must take care, however, to use it gently, as I have just described. Other means are adopted, as the exhibition of calomel and opium; antimony has also been given with a view of producing sickness and general relaxation; the warm bath has been also employed with the same view, as has the tobacco glyster. Mr. Cline employed the muriated tincture of iron with decided advantage; he gave five or ten drops every two or three hours, and it succeeded, when every other means had been found unsuccessful. I have already mentioned to you that the warm bath is a remedy employed for this complaint. I now tell you, that the cold bath has likewise been had recourse to, and with the most decided advantage; at this apparent contradiction you are probably surprised; however, such is the fact. Mr. Robert Pew, when studying at these hospitals, was attending a gentleman in Bishopsgate-street, who had spasmodic stricture. Mr. Pew (and I mention it to his credit, for it shewed a reflecting mind), recollecting that an immersion of his body in cold water, always caused him to expel the contents of his bladder, recommended his patient to jump into a cistern of cold water that was standing in the yard of his house. He did so, and the experiment completely succeeded; there was perfect retention before the immersion, but after it the urine was expelled with the utmost facility.

There are some very anomalous cases of spasmodic stricture. Mr. Western, a surgeon, was in a chemist's shop, into which a man came, and asked for half a pint of lime-water; this he immediately drank. Upon being questioned as to what he took it for, he said that it was to relieve a retention of urine produced by stricture. The lime-water relieved him, for, immediately after taking it, he passed his urine. Owing to constitutional peculiarities, medicines that will be successful with one patient, will fail in another. You must, therefore, have recourse to all, until the object be gained.

INFLAMMATORY STRICTURE.

This is equally quick in its approach with the common spasmodic, but unlike it in being accompanied with excessive pain. A man will consult you with this complaint, and will tell you he has the most inordinate desire to make water, but cannot. After having prescribed for him, and he has left your house, he will return again in a few minutes, and say that he is in the most excruciating pain, and cannot bear it any longer; this kind of stricture is generally produced by the inflammation of gonorrhœa, but there is another mode by which it is caused, and that is the introduction of a bougie; for the passing of these, although done

with care, will sometimes give rise to a violent inflammation of the urethra.

Treatment.—When a person comes to you having retention of urine, with dreadful pain in the urethra, you should immediately take blood from the arm, in such quantity as to produce syncope, administer purgatives, apply leeches to the perinæum, and put the patient into a warm bath; you will also, in this complaint, find antimony and opium in a state of combination particularly serviceable. It is highly improper to introduce either a bougie or catheter, while the urethra is in the inflamed state just described; if used with judgment and decision, the means I have stated will be sufficient to procure relief. There sometimes exists an

IRRITABLE STATE OF THE URETHRA.

If attended with inflammation, it is of the chronic kind. Persons having this complaint have a frequent desire to make water. This disorder may be cured by giving, three times a-day, an eighth part of a grain of the oxymuriate of mercury, and a drachm of the nitrous spirit of æther; these may be taken in any convenient vehicle, should be continued for a little time, and the complaint will disappear.

LECTURE LVIII.

The first subject on which I shall this evening engage your attention is enlargement of the prostate gland. There are three species of disease, exclusive of the formation of calculi, by which this gland is affected; now the one which I shall first describe to you, is

ACUTE INFLAMMATION OF THE PROSTATE GLAND.

This complain is not confined, like the chronic enlargement, to late periods of life, but attacks persons of any age, and generally terminates in suppuration. The most prominent symptom which characterizes this complaint, is violent pain immediately after discharging the urine, and in this respect the disease resembles stone. As the inflammation advances, an abscess in the prostate produces retention of urine; this may be relieved by a common catheter, it will answer the purpose well, and for this disorder the prostatic catheter will not be necessary. You therefore pass a common catheter, and about the fourth day you will perceive that matter escapes through it, and at which time your patient will be greatly relieved. The

Medical Treatment of Acute Inflammation of the Prostate Gland, consists in taking blood from the arm, and administering mild laxatives, together with antimonial medicines. Generally speaking, the disease is not so clearly manifested by the symptoms as to satisfy your mind of its true nature, until the matter escapes by the catheter: this, coupled with the other appearances, stamp its true character. Rigors do not attend the formation of this matter. The next kind of enlarged prostate that I shall describe to you, may be called

THE CHRONIC INFLAMMATION.

It is the consequence of age, and not of disease; when this affection produces partial retention of urine, it should be considered as a salutary process, for it prevents incontinence of urine, which, in old people, would almost constantly take place, were it not for this preventive. It makes the urine pass slower than natural; but this may be excused, when it is the means of preventing a continual wetting of the clothes. Well, then, the first circumstance by which you know that an old person has chronic enlargement of the prostate gland, is the length of time he requires for the purpose of voiding his urine. All of you must have observed that an old gentleman is twice as long, when engaged in this process, as a young one; and this is the first thing that attracts the patient's attention. Well, the next thing noticed is, that the urine has a particularly powerful smell, which arises from its being ammoniated, in consequence of some urine remaining in the bladder after each discharge. Remember, therefore, that in this complaint the whole of the water, each time it is attempted to be expelled, does not pass away. The next symptoms observable, are pain and numbness in the glans penis; the prepuce not possessing its usual sensibility, sense of weight and uneasiness in the perinæum, relieved by pressure with the finger; pain in the back of one or both thighs, in the loins, and at the origin of the sciatic nerve, and course of the ureters; the fæces are flattened, the reason of which is, that pressure has been made upon the rectum by the swollen gland. Persons having enlarged prostate for any length of time, generally have likewise prolapsus ani, and hemorrhoids: when the enlargement of the gland is considerable, the patient will kneel, resting upon his hands, with his knees widely distended, and thus continue for a tedious time, passing only a few drops of urine, after the most persevering efforts, and with the most excruciating pain. Besides what I have already stated, the ammoniacal smell of the urine, as the disease advances, becomes highly offensive, and at length the urine itself becomes white or milky; this appearance shews that the inflammation has extended to the mucous membrane of the bladder. If the

urine be much retained, it has the appearance of coffee, occasioned by an admixture of blood with it; this leads many practitioners to suppose, for the moment, that the case is one of stone; but, if you question the patient, your doubts on this point will be very satisfactorily removed. If you desire him to stand up, and jump firmly on the floor, he will do so; if you ask him whether he can ride over a rough road without much pain, he will tell you that he can; such doings and replies as these you would not obtain from a patient having stone.

At length the enlargement of the prostate, in many cases, will proceed until it occasions complete retention of urine; this, however, may be the effect of retaining more urine in the bladder, and for a longer period, than it ought; or it may have been the result of checked perspiration, either from cold weather, or from having imprudently laid aside some flannel covering; when the retention has been brought about by either of these latter mentioned causes, in conjunction with an enlarged prostate. Exciting on such persons a copious perspiration, will often afford relief.

When you introduce a catheter into the bladder of a patient having chronic enlargement of the prostate, you will find the urine of a very high colour, and of an exceedingly offensive smell. Well, then, such are the symptoms which accompany this kind of enlargement of the prostate gland; at least, they are such as I witness. Upon dissection of those who have died of this disease (and, without dissection, we know nothing at all of the matter), the prostate is found enlarged sometimes laterally, but most frequently the enlargement is in the posterior part, situated in the middle, or third lobe. Well, as the prostate enlarges, it is pushed forward; in consequence of which the urethra becomes curved immediately before the apex of the prostate; indeed, the coming forward of the prostate causes the urethra almost to double upon itself; the curve thus formed, is at the symphysis pubis; and it is in this situation that the difficulty on passing the catheter in diseased prostate is found. Tracing on the course of the urethra, behind the curved part, that canal is seen much enlarged; the next thing we notice is, that the urethra itself is considerably elongated, that is, from an inch and a half to two inches; which increase of length is behind the pubes, and it is owing to this circumstance that you are under the necessity of carrying on the catheter so great a distance after its point has passed the arch of the pubes. Well, then, as to the prostate itself, we find that it may increase to a most enormous size laterally, without giving rise to retention of urine. But that enlargement which occurs posteriorly in the third lobe (and which you have an opportunity of observing in the preparation now passing round the theatre), frequently occasions reten-

tion of urine, for the enlargement is situated immediately behind the orifice of the urethra; thus the urine collects behind the swelling, presses it upon the mouth of the urethra, and forms a complete barrier to its passage. It is of great importance for you to understand this; indeed, a correct knowledge of the morbid anatomy of the parts is altogether of consequence, because, if you have not this information, you would find the greatest difficulty in the introduction of the catheter; whereas, if you possess it, there will be no difficulty at all, and the urine may be drawn off with the greatest facility. It was owing to the imperfect knowledge of the anatomy of these parts that retention of urine formerly proved so often fatal, which occurrence is now very, very rare; the reason is, that within the last forty years frequent dissections have caused these diseases to be well understood, and an improved mode of treatment has been the result. Well, then, although the enlargement of the middle lobe of the prostate will give rise to retention of urine, by plugging up the orifice of the urethra, yet the lateral enlargement, although of great magnitude, does not produce any such effect. That you may be enabled perfectly to comprehend what I have been stating to you, I will send round for your inspection different specimens of the diseases I have noticed. (The learned lecturer here delivered several preparations to the students.)

Well, gentlemen, behind the prostate we frequently find sacs formed in the coats of the bladder: here is a preparation in which you see nine: here is another with, I believe, as many. These sacs are produced in the following manner:—the muscular fibres of the bladder give way, and between these fibres the mucous membrane protrudes; thus, in reality the sacs are elongations of the mucous membrane.

We also find the bladder much enlarged in this disease; as also the ureters and the pelvis of the kidneys.

How, then, when diseased prostate exists, are you to know it? what are the diagnostic signs? Why, the enlargement laterally may be readily ascertained by introducing the finger into the rectum; but the enlargement of the middle lobe cannot be so learnt. In what way, then? Why, by the introduction of a catheter or bougie, and the latter is the best; it will be found to stop suddenly: you are then to introduce a catheter, for the purpose of drawing off the water; the instrument will be resisted in its common course, and you must depress the handle a good deal, with a view of tilting its point over the enlarged gland; thus the end of the instrument will be rising perpendicularly, as it were, behind the pubes.

These, then, are the means you are to employ to obtain a correct diagnosis. Now, with regard to the cause of retention of urine, in those

cases of enlargement of the prostate, where the disease exists in the third lobe, it generally arises from the urine having been allowed to remain in the bladder for too long a period, thus collecting in so large a quantity that the swollen lobe is pressed forward against the mouth of the urethra, and thus closes the entrance to that canal.

With regard to the causes of enlargement of the prostate, it is often the result of libidinous age; old people frequently feel a greater degree of excitement than the constitution is capable of supporting, and disease is the consequence; powerful excitement is by no means desirable for aged individuals.

I shall next proceed to consider the

Treatment of Enlarged Prostate.—Very little can be effected here by medicine; it is a disease over which medicines have but very slight influence; you may, however, give the oxymuriate of mercury in very small quantities, for I believe I have seen it beneficial. But this is the treatment only for the enlargement of the gland. Well, but when retention of urine takes place, what plan of treatment are you to adopt then? When no urine whatever can be passed, and when there is great pain at the neck of the bladder? Why, you must take blood from the arm, apply leeches to the perinæum, administer purgatives, and put the patient into a warm bath.

If these means should succeed in procuring relief, the best medicine that can afterwards be given for the purpose of preventing a return of the retention, and at the same time of lessening the inconvenience which sometimes attends the complaint, is composed of fifteen drops of the liquor. potassæ, five drops of bals. copaib. and an ounce and a half of mist. camphor. If you give fifteen or twenty drops of the balsam, it then produces a stimulating effect, and does harm; administer it in the quantity that I have just mentioned to you, in conjunction with the other medicines, to which you may add ʒij. Mucilag. Gu. Acac.—I was attending with Dr. Key, a gentleman from the country having this disease, and in whom it proved a source of much annoyance: we at first gave him ten drops of the balsam, with the other medicines; this quantity, however, was found too stimulating, the dose was reduced to seven drops, and ultimately to five; after continuing it for a short time, we had the pleasure of sending this gentleman back to the country very much relieved. This medicine is by far the best remedy for this complaint that I am acquainted with. Other medicines, as the carbonates of soda and magnesia, the liquor. potassæ, and opium, are occasionally given; but, as the latter produces costiveness, it is decidedly improper. I can assure you, with much confidence, that the first medicine I described to you will be found the best. It will afford considerable relief,

which is all that you can expect, for you must not dream of making a cure.

When you are called upon to relieve retention of urine, from enlarged prostate, by the introduction of a catheter, the instrument should be fourteen inches in length, and a quarter of an inch in diameter. In consequence of the pressure within, a broad instrument will answer better than a narrow one, for being bulbous at the end, it will readily ride over the enlargement. When introducing the catheter, you will meet with no difficulty until you reach the curve, which the enlargement of the gland has produced in the urethra; the handle of the instrument is to be here slightly raised, for the purpose of insinuating the point through the curved part. Having passed this, you are then to depress the handle completely between the thighs, so as to occasion the point of the instrument immediately to rise perpendicularly above the pubes. Well, then, there is no other difficulty of introducing the catheter in this disease more than is experienced under ordinary circumstances. Recollect, after having passed the curved part of the urethra (the situation of which I have already explained to you), you are then to depress the handle as much as you possibly can; this will cause the point to enter the bladder between the pubes and enlarged lobe.

If any gentleman within these walls should ever be under the necessity of puncturing the bladder for enlarged prostate, which I trust in God he will not, it must be done above the pubes; but it never need be attempted at all, if you can perform your duty. I have known enlarged prostate occasionally occur in very young people; an instance of this kind happened in the other hospital: a boy was admitted, having symptoms of stone: but, before I say more of this, while I think of it, I want to add a few words on the treatment of diseased prostate. An elastic gum catheter is sometimes introduced into the bladder, and kept there: in passing an elastic gum catheter, the removal of the stilette will sometimes cause it to enter with ease, when it would not previously pass at all. If it be deemed requisite to leave the catheter in the bladder, I should prefer one of pewter rather than elastic gum, for it can be curved down before the scrotum, and, by plugging up the end, the patient may move about as he likes, and, at any time he wishes, can expel his urine. Thus the instrument becomes productive of great comfort. Let me observe to you, that if you employ a pewter catheter, it should be quite new, and ought not to be worn for a longer period than a fortnight, for the urine acts upon the metal, renders it brittle, and may probably cause the instrument to snap, if the time be extended beyond what I have stated.

I just now mentioned to you, in reference to young persons having

enlarged prostate, that a boy was admitted into the other hospital, having symptoms of stone, in consequence of which he was sounded, and the operation of lithotomy was about to be performed: the sounding, however, brought on inflammation of the bladder, which terminated in the boy's death; upon dissection, it was found that the symptoms for which he had been sounded, were produced by an enlarged prostate gland.

I have one other observation to make: persons will come to you for some supposed complaint in the bladder, and, upon inquiry, they will tell you, that they can pass their urine; now, if the disease consists of enlarged prostate, some urine will still remain; desire them, therefore, to make water, and then introduce the catheter: if the case be one of enlarged prostate, you will be enabled to draw off from half a pint to a pint of urine, having a strong ammoniacal smell. A gentleman, about six weeks since, called upon me, whose case was similar to what I have just stated:—on inquiry as to whether he had passed his urine, he told me he had just done so: upon introducing the catheter, I drew from his bladder a pint of urine, having a highly offensive ammoniacal smell. You have only to teach a patient who is thus circumstanced how to introduce the catheter for himself, and his danger will be at an end.

The last circumstance connected with the prostate which I have to mention to you, is that you will sometimes find

FUNGOUS POLYPI

growing from its base. Here is a preparation, in which you have an opportunity of seeing the nature of the disease, and here is another of the same description; this specimen was taken from a man who lived in the neighbourhood of the hospitals. A catheter was passed into the bladder of this man, in consequence of retention of urine. For nearly the whole of the day on which the instrument was introduced, he expelled nothing but blood; other attacks succeeding this, at length he died. The preparation now before you was taken from his bladder. I am not aware of any plan of treatment that is likely to be successful for the removal of this disease; it appears to be entirely out of our reach.

LECTURE LIX.

THE first subject of which I shall speak, is

IRRITABLE BLADDER.

During the latter stage of gonorrhœa, it often happens that the patient is

annoyed by a frequent desire to void his urine; this symptom at length becomes so urgent, that the inclination to empty the bladder occurs as often as every ten minutes or quarter of an hour. The pain that the patient feels is in exact proportion to the quantity of urine contained in the bladder, the greater the quantity, the more severe will be the pain. Sometimes in this complaint the urine will be mixed with blood; this appearance is calculated to deceive you, and excite a suspicion of the existence of stone, and induce you to pass a sound for the purpose of satisfying your doubts: now in this disease the introduction of an instrument into the bladder is highly improper, as it would produce additional irritation. The mode by which you can distinguish irritable bladder from stone, is this: attend to the state of the bladder when the patient is in pain, and when he enjoys a repose, if the case be one of irritable bladder, there will be no pain after the expulsion of the urine; on the other hand, if the case be stone, after the expulsion of the water then pain will be felt. By attending to this you may readily distinguish one complaint from the other. In irritable bladder, therefore, the pain is felt when the bladder is full; in case of calculus, the pain tortures when nothing but the stone remains. Sometimes the disease goes on to produce ulceration of the bladder; the urine will then be mixed with blood; there will likewise be a discharge of bloody mucus, and the inclination to void the urine will be more frequent, and exceedingly urgent. Cancer of the uterus is probably a more painful complaint than any other; but, with the exception of that disorder, I am not acquainted with a single one which tortures to such a degree as ulcerated bladder. Irritable bladder of itself is a dreadful disorder, the patient's life is a burthen to him, he is obliged to keep from society, and linger away his tedious hours in solitude. This disease, formidable as it is, may be brought on by very slight causes; even the retention of the urine, from motives of delicacy, beyond the period when there was a desire to discharge it, has been known to give birth to this horrible affliction. A young gentleman, with a party of ladies, was about to leave them for the purpose of making water, at the moment when the latter called their carriage; he thought at the moment that it would be indelicate to withdraw, and accordingly got into the carriage, having at the time a strong desire to pass his urine; in the greatest agony he rode twelve miles with his bladder full, at which time, having arrived at the end of their journey, he endeavoured to make water, when, to his utter astonishment, he could not void a drop; a surgeon was sent for, who took away the urine by means of a catheter; this afforded relief; but irritable bladder followed, then the suppurative process, and at last the sufferer

died from exhaustion. Upon *Dissection* of those who die of irritable bladder, the mucous membrane has been found in a state of extreme vascularity; the quantity of blood in the vessels rendering it as florid as red velvet. A respectable surgeon, of Finsbury-square, attended a patient for another disease, of which he died: the individual had, however, for a long period been the subject of irritable bladder, and, on examining the body, the disease had been so protracted, that ulcerated spots were seen in different parts, and the mucous membrane had nearly been removed; that part which remained, was uncommonly vascular, and resembled the tunica conjunctiva when under the influence of acute inflammation. I can state to you that irritable bladder is sometimes the result of gonorrhœal inflammation; at others is caused by retaining the urine too long. Now then, as to the

Treatment.—Your first object should be to keep the bladder in a state of rest; nothing can be done without it. Opium should be given in doses of from one to two grains, with a view of allaying the pain and irritation, and with the same object five or six grains should be introduced into the rectum, in the form of suppositories. You may also administer opium in conjunction with the liquor. potassæ; as the former, however, occasions costiveness, you had better combine the latter with some bitter tincture. A confined state of the bowels is to be obviated by the exhibition of castor oil. After shaving off the hair, a blister should be applied over the region of the pubes; the counter irritation thus produced will prove of infinite service. There is a foolish prejudice against the use of blisters in complaints of the bladder, from a belief that the cantharides become absorbed—this is a false theory.

To keep the bladder in a state of rest, a short catheter should be kept introduced; the instrument should only just enter the bladder; you know that the length of the urethra scarcely ever varies from nine inches; consequently you have no difficulty in knowing the length of the instrument that you ought to pass: a flexible catheter is the one that you are to employ, and after sufficient has been introduced, the remainder may be cut off; it should be tied to a bandage carried between the thighs and round the loins. The instrument thus used will afford great ease, and keep the bladder at rest, by allowing the urine to escape as fast as it streams from the ureters; thus keeping the bladder continually empty. If the bladder should be ulcerated, it ought not to prevent this method of treatment; on the contrary, it is the best that can be adopted; for, by keeping the bladder at rest, you afford the sores an opportunity of healing; this, then, is the treatment for irritable and ulcerated bladder. Of

MUCOUS DISEASE OF THE BLADDER,

Or, it might be denominated, catarrh of the bladder. This disease is known by the discharge from the urethra of an enormous quantity of ropy mucus; it is so thick, that it will hang to the sides of the vessel, and is of a yellow colour. It is produced from the internal surface of the kidneys, ureters, and bladder. I this morning saw a gentleman having this complaint, and it had existed for two years. The

Treatment is as follows:—Introduce a short catheter, as in the last case: let your medical treatment consist in the exhibition of oxymur. hydrarg. gr. ⅛ ter die; and likewise three times a-day you should give ʒj. spir. æther, nitrici in ℥ iss mist. camphor. Persons having this disease should drink plentifully of soda water. But the best remedy that they can possibly take is the balsam of copaiba; no medicine so completely robs the urine of mucus as this. Eight or ten drops three times a-day will usually be found quite sufficient: it may be given in conjunction with the medicines before-mentioned, or in ʒij mucilag. gumi acac. et ʒx aq. font.

PARALYSIS OF THE BLADDER.

Now and then a paralytic state of the bladder occurs. In early life, a case of this kind for the moment very much surprised me: a man came to my house, stating that he could not make water. I made him lie down on three chairs, and then, without the least difficulty, introduced a catheter; but, to my astonishment, not a drop of urine came away: and I was the more astonished, as I could distinctly feel the instrument above the pubes. I desired him to rise from the chairs and stand up: well, the moment he did so, the urine directly began to flow in a full stream; this arose from the weight of the super-incumbent viscera pressing on the bladder; and although the urine flowed freely while in the erect posture, yet, when the body was horizontal, not a drop would escape. He was cured by blistering the loins, and by giving him a pill twice a-day, composed of five grains of the chio turpentine, and a quarter of a grain of powdered cantharides: by these means, the voluntary power of the bladder became restored.

It occasionally happens that persons will be troubled by frequent bleedings from the kidneys. I knew a female who was annoyed in this way for more than three months.

Treatment.—In these cases you must order the recumbent posture to be rigidly adhered to, in order to give the vessels an opportunity of closing. The bals. copaib. should also be prescribed in small doses. The diet should be low: recollect there must be no change from the

recumbent posture until some time after the bleedings have ceased; and deviations from this rule will frustrate your curative intentions.

The next disease to which I shall direct your attention is

CHORDEE.

The name may make some of you smile, at least those of you who have not felt it. A chordee is a painful erection of the penis; and, during the erection, the penis is drawn either violently back, or to one side. The cause of the complaint is an inflammatory condition of the corpus spongiosum, and the pain is produced by the dilatation of the vessels, from the influx of blood, to cause an erection. The disease is most troublesome at night, when the patient is warm in bed; and one ingenious gentleman, with a view to keep the parts cool, invented a tube to pass between the legs, under the clothes, to the outside of the bed, for the purpose of admitting a current of cold air. The

Treatment consists in the application of poultices, fomentations, and leeches. During the night the penis may be enveloped with linen, wetted with the lotion plumb. subacet. Evaporating lotions may also be employed; the best medicine that you can give is thus formed:

℞. Liquor. potass. m. xx.
Extr. conii. gr. iij.
Mist. camph. ℥x.

Ft. haust.—It should be taken three times a day, and will be attended with the best effects. Calomel and opium may also be administered with much advantage. You may give a pill every night, composed of a grain of calomel, a grain of opium, and two grains of camphor; this will be found materially to abate the pain, and will be productive of much comfort. To get rid of the hardness which often remains after the painful erections have disappeared, you should rub the part with the ung. hydr. camphorat. and apply some of the same ointment spread on umbrella silk; by pursuing this plan of treatment, the hardness will generally disappear. There is a

CHRONIC CHORDEE,

Of which I wish to say a few words. It is of this kind: sometimes after a person has had gonorrhœa very severely, the dorsum of the penis will become so extremely hard, as, upon examination, to feel ossified. To remove this hardness, you should direct the limentum. hydrarg. to be rubbed on the part night and morning; or you may order it to be kept covered by a plaster of the cerat. saponis; this acts like a poultice, and, when the complaint is recent, will answer very well; but when of

long standing, you must have recourse to the liniment. hydrarg. and even this will often fail, owing to the extremely thickened state of the tendinous sheath of the dorsum.

OF BLEEDINGS FROM THE URETHRA.

We are sometimes called to persons having considerable hemorrhage from the urethra. It sometimes occurs from the rupture of a vessel during inflammation; at other times, and more frequently so, it is caused by the introduction of a catheter or bougie. From whatever cause it proceed, the

Treatment is very simple: press the finger and thumb upon the urethra, deep in the perinæum, and observe if you command the bleeding; if you do not, bring your hand a little nearer towards you: proceeding carefully in this way, you will at last learn the precise spot from whence the blood flows, which you will generally find to be from that part of the urethra opposite the symphysis pubis. If you continue to press with your finger and thumb for a quarter of an hour or twenty minutes, the bleeding will cease; but as this would be tedious, and often inconvenient, a compress placed upon the part, and secured by a roller carried round the loins, and brought up between the thighs, will answer equally well, and perhaps better, as it may be worn for an hour or two if deemed necessary. I have gone into a room, and found a person soused all over with water, in consequence of a bleeding of this description; such a practice is useless and absurd. You may give to the patient some aperient medicine; and, to lessen the disposition to hemorrhage, you may take blood from the arm. The next subject to which I shall call your attention is,

INFLAMMATION OF THE TESTICLE AND EPIDIDYMIS.

This complaint, from an error of pathology, used to be called hernia humoralis, in consequence of a belief that it arose from a fluxion of humours to the testicles. The inflammation of the testicles generally shews itself from within ten to fourteen days after the appearance of the gonorrhœal discharge. The first symptom indicative of inflammation of the testicles, is a sensation of a drop of urine in the perinæum; at this time the inflammation is proceeding down the urethra, and, before it reaches the testicle, affects the prostate, verumontanum, vasa deferentia, proceeds up the cord to the abdominal ring, then attacks the epididymis; and finally, the testicle itself. While the inflammation is confined to the epididymis, the patient feels little or no pain; but when it has passed to the body of the testicle, then there will be felt excessive

pain, in consequence of the unyielding nature of the tunica albuginea. The scrotum is sometimes reddened, arising from the degree of violence which characterizes the inflammation. The pain does not, generally speaking, correspond to the continued course of inflammation just now described to you; and, in fact, the inflammation itself often appears less regular in its process. The introduction of a bougie is a common cause of this complaint; and let me tell you, that when it gives much pain, or excites inflammation, it should not be used for three or four days together; but, rather, at intervals of three or four days; the

Treatment to be pursued is, first, to order the patient a suspensory bandage, (indeed, if the gonorrhœa be at all violent, it is not right to attempt its cure without one: it will often prove a preventive to inflamed testicles). Well, then, first order a suspensory bandage; give the patient two or three calomel and colocynth pills; and, in the morning, a dose of infusion of senna with sulphate of magnesia. Apply to the testis a lotion, composed of one ounce of spirits of wine and five ounces of water; or, muriate of ammonia and water, and a small quantity of the spirit. These means usually succeed in overcoming the disease; if they should not, you must take blood from the scrotum, but not by the application of leeches, at least not in private practice, as the mess they produce would, in all probability, lead to an exposure of your patient's malady; therefore, what I do is this—I direct the patient to stand before me, and, making the skin of the scrotum tense, I open three or four of the veins with the point of the lancet; then, by fomenting the scrotum with a little warm water, or directing the patient to stand before a fire, in five or ten minutes you obtain as much blood as is requisite, and by then making the patient lie down, the bleeding will immediately cease: thus, by this method, in a few minutes you procure more blood than you would in double the time by the application of leeches, and without any exposure. The weight of poultices is an objection to their employment; but fomentations may be prescribed with advantage, as they unload the vessels, and act beneficially in the same manner as leeches. At the same time, purgative medicines should be freely administered.

In some irritable constitutions, even all the remedies which I have named will not be successful, the pain and inflammation still continuing: and you are under the necessity of having recourse to opium—the best form in which it can be given is that of the compound ipecacuanha powder. I prescribe ten grains of this, and two grains of calomel, to be taken at night; sometimes I order them night and morning. Dover's powder and calomel thus combined, without exception form the best

remedy that I am acquainted with, for subduing irritable inflammation; and after the operation of purgatives, you will find them of infinite service.

Well, it sometimes happens that, notwithstanding all we can do, abscesses in the testicle will form: we must then apply poultices and fomentations, for the purpose of bringing them to a speedy issue. After the discharge of the matter, should any sinuses remain, you must inject with a solution of sulphate of copper, in the proportion of two grains to an ounce of water; diluted sulphuric acid is occasionally used, but I give the preference to the former. The reason that there is so much difficulty in getting these sinuses to heal, is that the semen is a fluid which is constantly secreting day and night, consequently the adhesive inflammation is interrupted in its progress.

From these sinuses

FUNGI

frequently sprout out. The treatment consists in paring them off at their roots, and then bringing the edges of the external wound in contact. These fungi are not of a malignant nature; they resemble those that occasionally shoot from the brain.

Well, a few words more, and then I will conclude.

WASTING OF THE TESTES.

This sometimes takes place, and is produced by two causes, absorption and ulceration. Here (showing a preparation) is an example of this: when this effect is produced, it is generally in lads from fourteen to seventeen years of age. It is a curious circumstance, that if a boy of fifteen or sixteen gets a gonorrhœa, that it is often succeeded by a wasting of one or both testicles. This effect is not the result of gonorrhœa only; but any cause producing inflammation of the testis, in very young persons, will now and then lead to a similar misfortune. I have known it happen in consequence of blows from cricket bats and balls. The only

Treatment likely to prevent their entire decay, is probably to employ them, to render them active, before the whole of the glandular structure has become destroyed. If, however, the inflammation of the testicle has been severe, that alone is sufficient to derange the glandular structure in very young persons. I have known both testicles waste from the formation of scrofulous abscesses. Such cases are truly deplorable.

LECTURE LX.

GENTLEMEN, having at a former time treated of chronic enlargement of the testicle, and irritable testicle, I shall proceed this evening to consider sympathetic bubo.

SYMPATHETIC BUBO

is usually the result of inflammation of the glands of the penis. The inflammation extends on the outward surface of the glands, the absorbents of the dorsum of the penis become enlarged, and, if you rub your finger along the dorsum, you feel them hardened like a knot or cord, and frequently connected with the glands near the pubes. A bubo of this kind rarely suppurates; now and then you will meet with one that suppurates, but only in very irritable constitutions. When the inflammation extends from the penis to the glands of the groin, these become inflamed also, and enlarged; and it is not at all surprising for a swelling, after a gonorrhœa, to come on in the groin; a patient under such circumstances is afraid of a bubo, and alarm is excited in his mind of its being syphilitic; you may however, calm his fears, and tell him that it is a common concomitant of gonorrhœa, and that he need not be uneasy.

The distinction between a sympathetic bubo, and one from syphilis, consists in this circumstance:—in general, one gland only is enlarged in syphilis; but in a sympathetic bubo you most frequently find a chain of glands affected. In the groin there are two sets of glands; one just above Poupart's ligament, and the other about two inches or an inch and a half below it: the lower tier is seldom enlarged from sympathy, the upper frequently. Whether the gland will suppurate or not, depends greatly on the mode of treatment: if mercury be given, it will be hurried into a suppurative process, therefore it should not be used so as to produce a mercurial action in the system; connected with aperients, it is proper. The plan of treatment in sympathetic bubo is the same as that for inflammation in any other part of the body; you purge the patient, apply leeches and an evaporating lotion, and advise him to diminish his quantity of exercise. By this plan it soon gives way, and it is his own fault if it suppurates.

The glans penis is covered with a plexus of absorbents, and, by making a small puncture in the skin of the dead subject, and introducing some quicksilver under it, those of the dorsum receive the mercury, and by this means you inject the glands of the groin. Irritation by sympathy, or from the venereal virus, extends in this direction.

The plexus on the glans becomes inflamed, the absorbents on the dorsum irritated, and then the glands of the groin enlarged; they are enlarged by a continued sympathy, rather than the sympathy by which one part becomes affected by another at a distance from it; it is by a continuation of the inflammation, which commences at the mouth of the absorbents, and terminates in the gland.

GLEET.

The disease of which I shall now proceed to speak is protracted, and difficult to cure; but first I have a few words to say on the nature of gleet. Gleet is said to be that stage of gonorrhœa when the discharge ceases to be infectious. I doubt whether there is such a complaint as gleet, according to this definition, for I cannot help believing that a gonorrhœa never ceases to be infectious. Gonorrhœa, when neglected, sinks into a gleet, and is known by the change of the colour of the discharge, and the pain attending the inflammatory stage ceasing. In this state, is the discharge infectious or not? I doubt myself whether a gonorrhœa ever loses its power of causing infection as long as any discharge from the urethra remains; and I will give you my reasons for this opinion. A married gentleman went to Lisbon from this country, and whilst at a distance from home, departed, as too many do, from the path of virtue, and went astray. The Portuguese lady with whom he cohabited, took care to give him a clap, that he might not forget her. He returned to England, and, at the expiration of five months and three days after first observing the gonorrhœa, he called on me, and asked whether he might return home with safety to his wife? he said that he had a little discharge, and wished to know if, after having had it five months and three days, it were possible for it to be infectious? I replied, "Certainly not, you may go home, there is no danger of your giving it to your wife." He went home and unfortunately gave his wife a severe clap. I attended both the parties afterwards, and was extremely sorry for what I had done; but I thought at the time I gave the advice, that a gleet was not infectious. But I think differently now, and believe that, after a continuance of several months, the discharge is infectious. A gentleman from the north of England, and who had been recently married, came to me, and said that he had communicated a gonorrhœa to his wife. Shocked at such an occurrence, I said, "How could you think of acting in such a manner?" "Why, sir, for fourteen months prior to my marriage, I had a gonorrhœa; I made various attempts to get rid of it, and had a variety of advice about it, but a yellow discharge always continued. I was told by every body that it was not infectious, and not till after such repeated assu-

rances did I get married: the consequence, however, is, that my wife has a severe pain in making water, and a copious discharge." I visited her, and found her in this state; she was sometime under treatment before she recovered. From what I have seen, I do hold that a medical man is not warranted in saying that a discharge of a gleety kind is not infectious. If the discharge is from a stricture, it does not produce infection. If the discharge is from an abscess in one of the lacunæ, it may always be known by its being absent for a week or more, and then flowing profusely, but not so in gonorrhœa: the discharge is generally suspended for some time, in an abscess of one of the lacunæ, and then returns, which is not the case in a clap; and the matter from an abscess of the lacunæ is not infectious, while the discharge which begins a gonorrhœa, and terminates in a gleet, never loses its power of producing infection. Women of the town, who frequently have a gleet on them, would not perhaps communicate a gonorrhœa to a debauchee; but let a man fresh from the country have intercourse with a woman under such circumstances, and he would immediately have a clap.

I need not tell you what gleet is. The discharge is generally transparent at first, afterwards yellow, and, if there be much excitement, green. If the excitement be very considerable, the discharge will be tinged with blood. Gleet is rendered purulent and bloody from excesses of different kinds. In this state, if you examine the urethra after death, you will find the following appearances: inflammation extending for two or three inches down the urethra, and if the urethra be laid open within twenty-four hours, it will be quite florid as far as the seat of the gleet, but pale in the other part. The discharge does not proceed from the vesiculæ seminales, or Cowper's gland, or the prostate, but from the lacunæ; and what you hear about seminal weakness, is nothing but folly and absurdity; there is no truth at all in it. The discharge commonly called gleet, proceeds from the lacunæ of urethra. A discharge now and then comes from the vesiculæ seminales, through the urethra: when a person has a costive motion, a drop or two of mucus, or of a ropy fluid, proceeds from the vesiculæ seminales, and is quite a different case from that called gleet; both are different as to their seat and origin; one may say with certainty, from the nature of the discharge, when it proceeds from the vesiculæ seminales. I was attending a gentleman once, for obstinate stricture, on whom I frequently used the caustic bougies; one day I called on him, and he said to me, "Well, sir, you have produced a considerable discharge from the urethra, and I have communicated it to my wife; she has considerable pain on making water, and, whilst voiding her urine, she is obliged, on account of the violence of the pain, to grasp the bed-post. I wish you

would speak to her." I saw her; she had a yellow discharge, and great pain on making water; but a few doses of aperient medicine soon carried it off. Now gentlemen, as to the treatment of gleet, I would observe this—that the medical treatment consists in the exhibition of sweet spirits of nitre, and the balsam of copaiba; from two or three drachms of the former, a drachm of the latter, in four ounces of camphor mixture, combined with an ounce of mucilage, will form the best mixture I know of; a large spoonful must be taken twice or three times a day.

℞. Spirit. Æther. Nitric. ʒij.
Balsam. Copaib. ʒj.
Mistur. Camph. ℥iv.
Mucil. G. Acac. ℥j.

Fiat mistura cujus capiat cochleare magnum bis vel ter die.

If this should not succeed, you must give cantharides, together with the Chio turpentine, made into a pill.

℞. Lytt. Pulv. gr. ¼.
Terebinth. Chi. gr. v.

Fiat pilula ter die sumenda.

When the other fails, this is the medicine medical men usually employ. The local treatment consists of the use of bougies and injections: no treatment is so successful as this; every other is inferior to it. A bougie should be passed every other day, according to the irritability of the patient, making use of injection at the same time: there will be no danger of stricture from this, because the bougies will prevent it: this is the plan of treatment you will adopt. Some persons apply to the urethra the unguentum hydrargyri nitratis; also the unguent. hydrarg. nitric. oxy., which should be diluted; a scruple to an ounce may be employed, and gradually increased to a drachm. The best injection is that with the oxymuriate of mercury—about a quarter of a grain to three ounces of water will be quite sufficient to begin with; it may be increased after a time, from half a grain to an ounce. If it should not, however, be productive of any good, in the proportion of half a grain to an ounce of water, do not use it any stronger, for it is likely to produce considerable irritation; in general it is an excellent injection. The sulphates of copper and zinc, and cuprum ammoniatum, have been recommended; each has had its advocates. The plan of treatment which I have laid down, is the one I have found the most effectual myself; it is generally certain in its effect, and always safe to employ. There are two diseases produced from gonorrhœa, which may be called

GONORRHŒAL RHEUMATISM AND GONORRHŒAL OPHTHALMIA.

The first of these affections is not an unfrequent disease. I will give you the history of the first case I ever met with; it made a strong impression on my mind. An American gentleman came to me with a gonorrhœa; and after he had told his story, I smiled, and said to him —do so and so—(particularizing the treatment), and that he would soon be better; but the gentleman stopped me, and said, "not so fast, sir; a gonorrhœa with me is not to be made so light of, it is no trifle; for in a short time you will find me with inflammation in the eyes, and, in a few days after, I shall have rheumatism in the joints. I do not say this from the experience of one gonorrhœa only, but from that of two, and on each occasion I was afflicted in this manner." I begged him to be careful to prevent any gonorrhœal matter coming in contact with the eye, which he said he would. Three days after this I called on him, and he said, "now you may observe what I told you a day or two ago is true." He had a green shade on, and there was ophthalmia in each eye. I desired him to keep in a dark room, to take active aperients, and apply leeches to the temples, in order to reduce the inflammation. In three days more he sent for me rather earlier than usual, for a pain in one of his knees (the left); it was stiff and inflamed. I ordered some applications, and soon after the right knee became affected in a similar manner. The ophthalmia was with great difficulty cured, and the rheumatism continued many weeks afterwards. This case struck me very forcibly, and I asked Mr. Cline, with whom I was in the habit of frequently coming in contact, whether he had ever seen rheumatism proceeding from gonorrhœa; and he replied, several times.

The next case did not surprise me so much; and now and then, ever since, I have met with similar ones. It is by no means an unfrequent occurrence for gonorrhœa to produce a rheumatic and painful affection of the joints. Whether it is by absorption of the poison, or the constant irritation produced by the inflammation of the urethra, I do not know; but certain it is, that gonorrhœa produces ophthalmia and rheumatism, and when not a single drop of matter has been applied to the eye. The inflammation generally attacks both eyes, and is of long duration. It requires the same remedies as are used in gonorrhœa; balsam of copaiba, or some form of turpentine, will be found the best, and to these you add such local treatment as the state of the inflammation demands. But, with regard to gonorrhœal rheumatism, some form of turpentine must be exhibited; either the spirit of turpentine, the balsam copaiba, or olibanum. When you have practised a little, you will find this to be true. I do not recollect to have met with a description of it in any

surgical work; but whoever has practised at all, must have frequently met with it.

GONORRHŒA IN FEMALES.

Gonorrhœa in females is rather less violent than in males. Its seat is in Cowper's glands, on each side of the urethra, at the os externum. On each side of the os externum there are two small openings, which will admit the head of a probe being introduced into them, and these are the seat of the gonorrhœa in females. There is a great degree of surrounding inflammation: the orifice of the meatus urinarius and lacunæ discharge matter. There is pain in making water, and in some severe cases it commonly happens that there is considerable irritation of the bladder, of which the shortness of the urethra is the cause; the inflammation at the orifice extends down the meatus urinarius, to the internal coat of the bladder. In this complaint, the meatus urinarius, Cowper's glands, and the extremity of the vagina, are red, and the carunculæ mytiformes swollen. I once had an opportunity of examining a woman from Magdalen ward of this hospital, who died of gonorrhœa; it is the only female with this complaint I have ever opened. In addition to the circumstances I have just mentioned, I found the urethra very red, and red streaks proceeding from the termination of the meatus urinarius to the bladder, and the bladder itself inflamed.

There is a circumstance which I am exceedingly anxious to dwell on—I allude to a discharge from young females; and I hope that there is not one here this evening but will be strongly impressed with the importance of the subject. Children from one year old, and even under, up to the age of puberty, are frequently the subject of a purulent discharge from the pudendum, chiefly originating beneath the preputium clitoridis; the nymphæ, orifice of the vagina, and the meatus urinarius, are in an inflamed state, and pour out a discharge. The bed linen and rest of the clothes are marked by it. It now and then happens to a nervous woman, to be alarmed at such an appearance, and she suspects her child of having acted in an improper manner; and perhaps, not quite clear herself, she is more ready to suspect others, and says, dear me, (if she confesses), it is something like what I have had myself. She goes to a medical man, who may unfortunately not be aware of the nature of the complaint I am speaking of, and he says, "Good God, your child has got the clap." (*A laugh*). A mistake of this kind, gentlemen, is no laughing matter; and though I am glad to make you smile sometimes, and like to join you in your smiles, I cannot do it on the present occasion, for it is too serious a matter. I can assure you a multitude of persons have been hanged by such a mistake. I will

tell you exactly what takes place in such cases: the mother goes home, and says to the child, "Who is it that has been playing with you? who has taken you on his knee lately?" The child innocently replies, "No one, mother; nobody has, I declare to you." The mother then says, "Oh, don't tell me such stories; I will flog you, if you do." And thus the child is driven to confess what never happened, in order to save herself from being chastised. At last she says, "Such a one has taken me on his lap." The person is questioned, and firmly denies it; but the child, owing to the mother's threats, persists in what she has said. The man is brought into a Court of Justice; a surgeon, who is ignorant of the nature of the discharge I am now speaking about, gives his evidence, and the man suffers for that which he never committed. The mother is persuaded, if there be a slight ulceration on the parts, that violence has been used, and a rape committed; she immediately says, "What a horrid villain must he be for forcing a child to such an unnatural crime, and communicating to her such a horrible disease! I should be glad to see him hanged."

If I were to tell you how often I have met with such cases, I should say that I have met with thirty in the course of my life. The last case I saw was in the city: a gentleman came to me, and asked me to see a child with him, who had a gonorrhœa on her. I went, and found that she had a free discharge from the preputium clitoridis. I said that there was nothing so common as this. There was considerable inflammation, and it had even proceeded to ulceration, which I told him would soon give way to the use of the liquor calcis with calomel. "Do you tell me so? (he replied), why, suspicion has fallen on one of the servants; but he will not confess. If he had appeared at the Old Bailey, I should have given my evidence against him; for I was not aware of what you have just now told me." I told him that, if the man had been hanged by this evidence, he would have deserved to be hanged too.

I am anxious that this complaint should be known by every one present, and that the remarks I have made should be circulated throughout the kingdom. When a child has this discharge, there is a heat of the parts, slight inflammation, and this sometimes increases, and goes on to ulceration. This disease sometimes occurs in children at the time of cutting their teeth. The treatment you adopt is the lime-water, with calomel, applied to the part; and give calomel and rhubarb, combined with jalap.

As to the treatment of gonorrhœa in females, you must direct the patient to take diluents: we possess no medicine which has a specific influence over the discharge in females; you must depend on diluents,

and appease any local inflammation by the use of such lotions as the liquor. plumbi subacetatis, dilutus; a sponge dipped in these should be introduced into the vagina, and be allowed to remain there: it should, however, be often removed and cleansed. It is necessary that the patient should take aperient medicines.

OF GLEET IN FEMALES.

I observed, when speaking of gleet in males, that it was doubtful whether the discharge, as long as it continued, ever ceased to be infectious. The same observation applies to females. The learned professor here related the experiment detailed by Mr. Hunter, in his work on Syphilis, shewing the length of time the infection may be propagated by a female, after the appearance of the discharge.

LECTURE LXI.

CHANCRE.

THERE are two poisons, as I mentioned to you before, communicated by venereal intercourse; one the poison of gonorrhœa, which, falling on a mucous surface, produces from that surface a discharge of matter which is infectious; the other, the poison of syphilis, which, applied to the skin, or, as far as is known at present, to any surface, produces inflammation and ulceration, forming a sore called chancre; which, being received into the glands of the groin, occasions bubo, and being conveyed into the system, circulates with the blood, produces ulceration on different parts of the body, on the mucous membrane of the throat, the skin, the periosteum and bones.

The time at which the effect of the poison that produces chancre makes its appearance is uncertain; the chancre, however, generally appears three or four days after connexion, and from four to seven days is the average time. The poison first produces inflammation, then ulceration; the inflammation is attended by a pimple arising from the surface affected, which is like a common pimple, excepting that it is of a deeper colour; instead of being quite florid, it is of a darker hue. The pimple is surrounded by a kind of erysipelatous inflammation; an ulcer forms in the centre, and then a pit forms in the body of the sore, which is often of considerable magnitude, and extends beneath the skin. The surrounding edges of the sore are hard and ragged, its surface is yellow, and the margin red; and if you were asked if a sore was a chancre or not, you would answer, I must feel it first, and not decide merely by looking at it. You would then lift up the part between your

fingers; and, if you found a hardness beneath, this would be a very goodcriterion of its being a syphilitic sore; for it is neither in the ulceration, nor in the yellowness of the surface, nor the raggedness of the edges, but in the colour and hardness of the sore, that the characteristic marks of the chancre manifest themselves; from the presence of these, you form an opinion, and are enabled to say positively if the sore be a chancre. But gentlemen, if you ask me whether it is possible to determine that a sore on the penis is not chancre, I should tell you, that I believe it impossible for any man positively to say that it is not; chancre varies exceedingly in its appearance in different persons, also in the same person under different degrees of irritation, and as it is accompanied by more or less of inflammation; and every one who has seen any thing of practice in his profession must know, that secondary symptoms occasionally appear after sores, which, at the time he was led to suppose were not syphilitic. I could say in an instant when a sore had a syphilitic action; but still a sore may not have the character of syphilis, and yet be so.

We shall now trace the varieties of chancre, and the causes which more frequently produce them. The first circumstance which gives rise to variety in the appearance of chancre is—1st. When the chancre is produced by the application of the venereal virus to a surface that is broken. Now, if the poison be applied to a sore, or an excoriation, it produces ultimately a syphilitic action, as is witnessed afterwards in bubo and secondary symptoms; but it is a long time before the venereal action is excited, and, in these cases, you will find that the sore has neither a surrounding hardness, nor a livid colour. When chancre is produced by the application of the virus to an excoriation or tear, you must be contented to judge of its character from other circumstances; it may have the appearance of being syphilitic, but you must hesitate before you give a positive opinion—it requires time to decide it, and you may say to the patient, that there is considerable doubt as to the nature of the sore; it may be simply an excoriation, or, on the other hand, it may be a syphilitic sore: your best plan is merely to apply simple applications to the part, and wait, if it be syphilis, till secondary symptoms appear, when you must have recourse to mercury for the treatment of the complaint. This is one of the varieties caused by the application of the venereal poison to an excoriation or tear, preventing you from forming an accurate judgment on the first appearance of the sore. I tell you what I generally inquire of patients under these circumstances, viz. whether they observed the sore on the following day after connection. If they say "Yes," the probability is, that it is not syphilitic, but it is no infallible criterion; therefore treat the sore as you would

any other, by common means at first, and wait the issue, to see whether it is venereal or not. Another circumstance, producing a variety in the appearance, is its seat. Chancre situated on the frænum is different to what has been described attacking the other parts; it generally happens that a chancre in this situation rapidly destroys the part, unless mercury be given early; it is more irregular in its appearance than chancres in other parts, and does not assume a character similar to those seated on the glans. If it happens to be on the edge of the prepuce, a good deal of effusion into the cellular membrane takes place, and phymosis is produced; when the sore is situated just where the skin doubles over the penis, it is exceedingly troublesome—there is considerable swelling, also a difficulty in drawing back the skin; in this situation it seldom fails to produce phymosis, from what cause it is scarcely necessary to explain to you—the inflammation leads to an effusion into the cellular tissue, and the result is phymosis. If the chancre be on the corona glandis, or between it and the frænum, you often find it extending deep, producing sloughing of the part, and even of the glans itself, which is not at all an uncommon result of deep-seated chancre at the corona glandis.

The next circumstance which gives rise to a variety in the appearance, is when it ulcerates deeply into the cellular tissue: a chancre on the surface of the skin is very slightly irritable; but, if it passes the skin, and extends into the cellular tissue, it assumes a disposition to ulcerate and slough. A chancre on the skin heals under the use of medicines and external applications; but, if once it enters beneath the skin, and inflames the cellular tissue, it becomes irritable, sloughs, and is attended with danger; the danger arising when the chancre extends beneath the part on which it began. When the chancre is on the surface of the skin, and does not produce deep ulceration, it is a disease slow in its progress, and easy of cure; but if, on the other hand, it extends deeply into the part, it proceeds with rapidity, and those acquainted with the disease dread it, knowing the extent of sloughing which will be produced. But, gentlemen, of all the causes of varieties of chancre, one of the most common, is the habit and constitution of the patient. If each of you (which God forbid!) had a chancre this evening, and you all used the same applications, in four or five days, scarcely two of you would have the chancre of the same appearance. Go into the admission rooms of these hospitals on taking-in days, and you will not see two men with chancres alike. The variety is not only produced by the previous mode of living, and the constitution of the patient, but any act of intemperance, excess of any kind, or any thing that hurries the circulation, will alter the action of the part. So, if two patients be attacked with chancre, the one not of an irritable habit, and

the other being very irritable, you will find in the first that there would be scarcely any inflammation, whilst in the second it would be violent, and of an erysipelatous character; indeed, under these circumstances, if the part be not very carefully managed, it will be in considerable danger. So a man with a chancre to-day, which has a healthy appearance, shall to-night indulge in some act of debauchery, to-morrow he will have a bloody discharge from the sore, inflammation round the edges, and an irritable state of the parts, which you will soon find assuming a sloughing disposition. Thus, then, if the constitution be irritable naturally, from intemperate habits, or inattention to rest, the most serious state of chancre may arise. People pursuing a particular business, such as journeymen bakers, whose habits are of the most irregular kind, are frequently affected with chancres going into the sloughing process. See, for instance, how these people pass their lives, kneading dough during the greater part of the night, lying down only during short intervals to rest, frequently staying up all the night without any repose; and if they rest at all, only for a few hours towards morning, and thus rendering their constitutions excessively irritable. When the chancre proceeds to a sloughing state, from any of the causes I have mentioned, the pulse will be generally from 120 to 130; you will also find a considerable erysipelatous inflammation extending round the chancre; and, in a short time, the sloughing process commences, by which the penis is lost. These varieties of chancre you have an opportunity every week of seeing for yourselves; and if you have not observed them, it shows a shameful neglect of your duty. The time at which chancre appears after connexion is from four to seven days; but if there is a gonorrhœa also, it prevents the appearance of the chancre so early: thus, if a person be affected with the two poisons, the one delays the appearance of the other. If the matter of a chancre be applied to the urethra, it will not produce a gonorrhœal discharge, but a sore, and that sore will pour out a serous fluid, mixed with the red particles of blood, not at all purulent, but of a bloody serum, which is the matter from the chancre, and not in any respect gonorrhœal. The matter of gonorrhœa does not produce chancre; for, if leeches be applied to the prepuce, and the gonorrhœal matter afterwards comes in contact with the leech-bites, a sore is produced, not of a chancreous character, and it heals by common means. The poison of chancre will not produce a gonorrhœa, nor the poison of gohorrhœa induce a chancre.

Having thus endeavoured to explain the character of chancre, I shall now speak of the treatment it requires; and here let me remind you, that I shall deliver no speculative opinions, nothing but what you may see every day exemplified in practice. The first point to be considered

respecting the cure of chancre is, shall caustic be applied to it or not? He who uses caustic to chancres pursues a line of practice liable to be productive of much mischief. 1st. Because the application irritates the part, and may in consequence, produce bubo. 2d. If the action of the sore be altered by it, it will not prevent the constitution from being affected, because if there be any ulceration, the process of absorption must have commenced, and the poison applied to the part will be taken into the constitution. I would ask the person who uses caustic for the cure of chancres, how is chancres produced? We know that there can be no sore without the ulcerative or absorbent process; and the chancreous matter applied to a part, causing a sore in that part, must be absorbed and taken into the system. Caustic to chancres is a very objectionable application; but it is the acme of folly to endeavour to cur ea patient by means of it, without adopting a proper mercurial treatment, to counteract the constitutional effects that will otherwise be produced by the absorption of the venereal virus. A young person with whom I was intimate whilst I lived with my old master, got a chancre, which, to use his expression, he burned out by application of caustic: I laughed at him for being so foolish; the caustic produced a slough, but cured the chancre, and I thought nothing more of the circumstance. Some time afterwards I visited him in the country, and I asked him how he was? "Very well now," he replied, "but I have been in a fine scrape; I was engaged, when I left town, to a young lady, the nuptials were to have been soon celebrated, and the business of life commenced." I involuntarily smiled, but he said, "Not quite so merry: when I got into the country, I had what I conceived at the time was only a huskiness of the throat, which I had caught from a cold. My throat becoming more painful, I looked into the glass, and perceived that I had a large sore on the tonsils, decidedly syphilitic. You may conceive how I felt: I wrote to the lady that I was unwell, who, exceedingly hurt at such news, came and nursed me whilst I underwent a course of mercurial treatment (she being perfectly unconscious of the cause of my complaint), by which means I was quite restored, when the marriage ceremony was celebrated." It was just a proper punishment for his folly. The application of caustic to a chancre does not render a person safe from its effects, for, if the sore be a chancre, the syphilitic virus must have been admitted into the constitution. I will tell you what treatment you should pursue: as soon as a patient applies to you for this complaint, you should ask him if he wishes to be properly cured at once, by a simple mercurial treatment, or have the chancre cured without it, and run the risk of having secondary symptoms occurring at a future period. His answer will be, "for God's sake, give me what

is proper now for my cure, without submitting me to the chance of being laid up a second time with this complaint;" and you then order him to take five grains of blue pill, and a quarter of grain of opium, night and morning; if you exceed this quantity, let him take an additional pill at bed-time. Now, gentlemen, this medicine, continued for three weeks, will be quite sufficient for the cure of the disease. It may be asked, why do you combine opium with the mercury? If you were not to do it, the result would be, that the mercury by itself would irritate the chancre, but, if the mercury be combined with opium, it rarely produces this effect; the way, therefore, to prevent irritation and a sloughing state of the chancre, is to give the mercury in conjunction with opium. The patient will ask you how he should live whilst he is undergoing this treatment? you may tell him that he may follow his business or occupation just the same as before, that he should not take any species of food which is likely to disorder his bowels, as it is desirable to prevent the mercury acting on the intestinal canal; but his mode of living should be as usual—he should avoid acids, because they would purge him, and for this reason he should not take vegetables, which contain much acescent matter; there is no necessity for him to change his food. Two or three glasses of wine a-day would not prevent the action of the mercury—taken so as to hurry the circulation, will oppose it; but, if taken moderately, it will do no harm. With respect to the quantity of mercury given, the treatment of the syphilitic disease is greatly improved, for all that you want is just to keep up the mercurial action on the constitution for a short time, instead of making the patient spit at the mouth, for weeks and months, as used to be done. One point has also been ascertained, that chancres for which no mercury has been taken, are not always followed by secondary symptoms. With the exception that lesser quantities of mercury are given, I should say that, within the last twenty-five years, the treatment of the venereal disease has gone back rather than improved. Secondary symptoms now are more frequently met with than formerly, owing to the neglect of a mercurial treatment on the first appearance of the complaint. A person hardly knows now when he is cured: a half practice has been substituted for one that was perfectly efficient: and the result is that, at present, a person is scarcely ever properly cured. Day after day we see persons with pains in their limbs, sores on their body, and affections of the throat, and do not know whether they are syphilitic or not. You ask the patient if he has had chancres; he says "No." "Have you had no sore or excoriation?" you then inquire; when he will often tell you, "Yes, I had several excoriations;" and thus, you do not know whether the eruption is syphilitic or not: but more of this when speak-

ing of the use and abuse of mercury. The local application I make use of, is the liquor calcis with calomel, and I will tell you why I always make use of local means. The local application lessens the irritation of the sore, and prevents its attacking the neighbouring parts. If any of you had chancre, in addition to the local means, you would, if the sore healed, continue taking medicine: do not think, because the sore is healed, that you would stop the mercury: no, it must be continued during the time I have mentioned before, to prevent the recurrence of secondary symptoms; it will be proper to heal the sore as quickly as you can, but you must protect the constitution against the effects of the venereal virus, by mercurial treatment: this is the best possible treatment, and which you will pursue if you deal honestly with your patient. If you wish to see the effect of any new project, or try any experiment, this is all well, but you should try them on yourselves. If patients, however, come to you for advice, they place themselves under your care, and confide in your skill; therefore, it is the duty of every surgeon to adopt the most certain and effectual means for their relief. With respect to local applications, I think the sulphate of copper too irritating; submuriate of mercury sprinkled on the sore, is sometimes beneficial, but it is generally too irritating also. The unguentum hydrargyri nitrico-oxydo, I have seen of considerable use after a time; but it should not be applied at the beginning of the complaint. The unguentum hydrargyri is a bad application; it is too irritating. Sometimes it appears that the chancre goes into an indolent state, then it will be advisable to use the nitrate of silver, not with a view to destroy the part, but for the purpose of cleaning the surface, and thickening the edges of the wound; the skin surrounding the part is thin, and by the application of the nitrate of silver you thicken it, and thus enable it to carry a greater number of vessels to produce cicatrization.

PHYMOSIS.

It not unfrequently happens, that phymosis is the result of chancre. It is hardly necessary for me to say what phymosis is; it sometimes arises from slight inflammation of the cellular tissue, and effusion of serous matter into it. Here I will observe, that, should you find, during a mercurial treatment, considerable inflammation produced round the chancre, lay aside the use of mercury.

The great secret, in the treatment of this disease, is knowing when to discontinue the use of mercury; you should always suspend it when the inflammation is increased during its employment, for if you persevere in the use of mercury, you will only add to the irritation, which will end in the sloughing process, and destruction of the part. If I were

to give to a patient mercury for chancre on the Saturday, and on the Monday following I perceived swelling and inflammation round the sore, I should immediately lay aside the mercury, give active purges, order poppy fomentations, and the parts to be suspended. The black wash should be applied to the sore, injecting it under the skin, unless it should increase the irritability of the part. After the purges, administer opium in considerable quantities, and when you have reduced the inflammation, have recourse to the mercury again; but, if you had gone on with this medicine in the irritable state of the part, the result would be sloughing of the penis. When there is phymosis, together with sloughing of the penis, stop the mercury, order the patient the recumbent posture, and the part to be well supported; use fomentations and poultices of a slightly stimulating kind; you support a gently stimulating action in order to produce a sectretion sufficient to support the powers of the part; if you stimulate it too much, the part will be destroyed, and if you omit to do it in a slight degree, there will be no separation of the slough. The poultices we generally employ are made with stale beer-grounds; carrot poultices is stimulating to the part; this poultice stimulates rather too much, unless the carrots have been boiled for a long time. The medicines we give are musk and ammonia, five grains of the ammonia with ten of musk, two or three times a-day. The nitric acid lotion is a common application used in these hospitals, and we find none produce so much good; the proportions are about forty drops of undiluted acid, to a quart of water. When phymosis remains after the inflammatory state has passed away, it will be necessary to perform an operation for its cure. The operation is exceedingly simple, it consists in introducing a director beneath the skin, along the glans, till it reaches the corona glandis; this is the extent to which it should be introduced, so that the point should rest against the inside of the prepuce; this being done, a sharp-pointed bistoury is to be passed along the director to its extremity, then pushed through the skin opposite to the corona glandis, and drawn out. But when you have done this, you will find that the internal part of the prepuce is not divided as much as the external, which you are obliged to divide a second time. The next thing you do, is to apply a piece of lint round the prepuce, which is to be supported on the penis by tape; the roller should be applied, so as to make gentle pressure, for the purpose of preventing a secretion from the blood-vessels. You let the patient remain as long as he can without making water, in order not to disturb the dressings. When you see him on the following day, you soak the penis in warm water, remove the lint, and draw the prepuce gently over the glans. This you should do daily, taking care that the edges of the divided

surfaces do not unite. When the part is quite healed, a small aperture only is left in the upper part of the prepuce, which is of very trifling importance.

LECTURE LXII.

We spoke, gentlemen, at the conclusion of the last lecture, of phymosis; we shall now proceed to paraphymosis.

PARAPHYMOSIS

is not an uncommon consequence of chancre. When there is tightness of the prepuce from inflammation, it frequently happens that, after the skin has been pulled back, it cannot again be drawn over the penis, on account of the skin forming a tight ligature round the penis, just behind the corona glandis, strangulating it in the same way as the intestine in hernia. The object in your treatment should be to reduce the strangulated part as quickly as possible: all other means are improper; the application of cold is absurd; you merely lose time by employing it—it is a vain and useless mode of procedure. The proper plan for you to pursue is this; you see the penis greatly distended with blood; therefore, take hold of the glans between your fingers, and endeavour to empty the vessels by means of gentle pressure. When you have done this for a few minutes, you endeavour to reduce it by pushing the glans back, and, at the same time, taking hold of the skin of the penis, and drawing it forwards. By this plan you will generally succeed, if you see the case a short time after it has happened; but if the paraphymosis has existed for some days, it will be wrong to attempt reduction by pressure on the glans. You should then divide the strictured part with a bistoury. This you do by separating the skin on each side as much as you can from the stricture; you then insert a director under it, and with a sharp-pointed bistoury divide the stricture, which will allow the skin readily to be drawn over the penis. After the paraphymosis has been reduced, poultices must be applied to the part. It is sometimes necessary to remove a portion of the prepuce by circumcision: in cases of phymosis, where the prepuce is naturally long, and only a small division of the skin is required to allow it being drawn back, this operation is preferable to the one which I before described.

Having spoken of the common consequences of chancre, I shall now treat of the

IRRITABLE AND SLOUGHING CHANCRE.

Every now and then a chancre becomes irritable, from causes already pointed out. Directly you see a chancre assume an irritable character,

desist from the use of mercury. To know when to stop the mercury, is the great secret in the treatment of the venereal disease. It is in consequence of mercury being given in this state to the patient, that it does so much harm, producing those sloughing chancres that not unfrequently destroy life. Thus, when a sore becomes irritable under the use of mercury, and the inflammation extends, lay it aside, and have recourse to simple applications, such as poppy fomentations and poultices, to lessen the irritation. After you have purged the patient, give opium combined with saline mixture; as good a medicine as you can employ, under these circumstances, is the liquor. ammoniæ acetatis. In this way you will dimish the irritation; and when the surrounding inflammation is got rid of, return to the mercury, taking care to discontinue it if the irritability should return. Some advise the compound decoction of sarsaparilla, and I believe that it has the power of diminishing, to a considerable degree, that irritability of constitution from which many persons suffer during an attack of syphilis; with this view, give it by all means; but as to its curing syphilis, I do not believe a word of it. You may suspend the syphilitic symptoms for a time, but they will soon re-appear; and a person who trusts to this alone will be a martyr to a disease which might have been easily cured. But more of this when making some general remarks on syphilis. If a person with irritable chancre is guilty of intemperance, addicts himself to any excess, or is careless of his health, the sore will slough, and often end in the destruction of the penis. Do not think that it is a rare occurrence for the penis to be destroyed by mercury: no; a chancre that has remained weeks in a healthy state shall become irritable, and, by maltreatment, by the injudicious and improper use of mercury, shall slough, and end in the destruction of the penis; this is not a rare case, and it is attributed to the venereal disease, but in reality is an effect of the injudicious use of mercury. This is a true history of the case. When you see a sore take on the sloughing appearance, the treatment must be changed, the employment of mercury suspended; what you do, is gently to stimulate the part by the nitric acid lotion; there is no better application in this stage of the disease than this, and those who have attended to the practice of the hospital need not be told of this by me. From thirty to fifty drops of acid, in a quart of water, is the proportion in which you should use it; fomentations and poultices may sometimes be employed, but in general they are not good, as they soften and weaken the parts rather too much; they are not sufficiently stimulating. Warm spirits of turpentine may sometimes be employed with benefit. You will be obliged to have recourse to a great number of applications, and frequently to change them, before any relief can be obtained.

Most of you recollect a girl over in the other hospital, in Lydia's ward, who had sloughing of the pudendum; seventeen or eighteen different applications were employed, but the same application seldom agreed with the sore for five days in succession—it was obliged to be changed, and some other used; the girl, however, ultimately recovered. When the patient is very irritable, opium, and the compound decoction of sarsaparilla should be exhibited; in this way you diminish the irritability of the part. When the sloughing extends, the ammonia combined with opium will be found of considerable benefit; five grains of ammonia and one grain of opium, three times a-day. We are in the habit of giving in these hospitals ammonia and musk, ten grains of musk and five of ammonia, three times a-day, in the form of a bolus; and, on the whole, we find that they exercise a considerable influence in sloughing chancre. At the same time you must support the patient's strength by a nutritious diet, and give stimulants to assist the digestive powers, and the power of the circulation; wine and porter must be allowed; porter, if the patient is of an irritable constitution, and wine if he is not; they must be given so as to keep up a vigorous action, but not to excite a feverish heat.

By these means you will generally put a stop to the sloughing, and establish the patient's health. If the chancre slough early, you should not make use of mercury immediately after the healing process has taken place, but wait for the secondary symptoms. If the sloughing comes on early, the patient is often safe from future attacks, and I therefore generally wait to see the result. It occasionally happens that an opening in the urethra is formed to a considerable extent; when there is an opening there are three plans of treatment to be adopted: —1st. If the opening is small, a bougie should be passed till there is established a considerable diameter of the urethra, just anterior to the opening, to allow the water to pass freely, when the aperture will soon close. 2dly. If the opening is large, a caustic should be applied round the edges of the aperture, a little nitric acid will do, which produces a slough of the cuticle and cutis; when the healing process commences, it should be continued once a-week till a cicatrix forms, and draws the parts together, and entirely cures the patient. 3dly. The next mode adopted is, the Taliacotian operation: it consists in bringing a piece of the living skin over the aperture. Some pare the edges of the opening, and apply the twisted suture, but it never succeeds, as the urine soon bursts it open; but the other operation has been performed with success. I had a patient once with this complaint, in whom I separated a small piece of skin from the scrotum, and applied its raw surface to the edges of the wound; this I kept in its situation by three sutures. Adhesive

plaster was put over the whole, and a gum elastic catheter kept in the urethra. This case completely succeeded. Mr. Earle has since performed an operation on a similar principle and with perfect success. I think it an operation which you ought to perform; it may be done in any part of the urethra.

These are the modes of treatment in the sloughing urethra. If there is at the mouth of the urethra a cicatrix at all, or the orifice is small, you cannot cure such a stricture in the usual mode. You must cut off a piece of bougie, and regularly wear it in the urethra, withdrawing it twice or three times in the course of the day, to allow the urine to pass off. The object is to excite a suppurative inflammation, and thus remove the stricture; for when the suppurative inflammation has been excited, the urethra has not the same disposition to contract as before. Sometimes the extremity of the urethra is closed; after making water in a stream about the size of a bristle, the opening suddenly closes, and the patient cannot make a drop. If called to such a case, what you do is not to open the bladder, but you put the point of a lancet into the glans, just at the commencement of the urethra, the urine gushes out by the side of the lancet, and then a bougie requires to be worn to keep the orifice open. Such is the treatment of obstruction of the urethra at its orifice.

CHANCRES IN WOMEN.

Chancres in women are often worse than in men: they attack the external labia, not unfrequently the inside of the nymphæ, and the os externum vaginæ. Sometimes a great number of these exist at the same time in one female, and are accompanied with but little irritation; she scarcely knows that she has them, till she feels the urine smart as it touches the skin; this engages her attention, when she perceives that she has several pimples, which soon ulcerate. If this occur in a bad constitution, and extend into the cellular tissue, inflammation and sloughing of the part take place. Sometimes the labia and nymphæ slough away, and in this way it is so many lose their lives. I visited one day the St. Giles's workhouse, and in a small ward belonging to the medical establishment, I saw seven cases of sloughing chancre, and of these seven five died. It is almost impossible for them to recover, when there is such a destruction of parts. If you inquire into the history of the case, you find that it first began by a few pimples; the unfortunate female will also tell you that she continued to walk the streets, night after night, exposed to vicissitudes of temperature; that she indulged in the use of spirituous liquors, in order to support her declining strength; the disease thus occurring in a constitution destroyed by irregularity of habits, the patient has but a very slight chance of recovery. If one

of these miserable cases could be depicted from the pulpit, as an illustration of the evil effects of a vicious and intemperate course of life, it would, I think, strike the mind with more terror than all the preaching in the world. The irritable state of the patient, in which the disease occurs, leads to the destruction of life, and thus it is that such a great number perish. If I said that I saw twenty of these cases in a year, I should not exaggerate. Neglected chancres and injured constitutions lead to this most frightful disease. The treatment is the same as for males.

WARTS.

Warts were formerly considered as syphilitic, but you are to learn that they are nothing but a local disease, requiring nothing but local means for their cure. Yet, when I say local, I must observe that they frequently secrete a matter which is able to produce a similar disease in others. I have known two instances of this. The one occurred in a Mr. Guller, dresser to Mr. Chandler. Mr. Chandler removed some warts, which were of a very large size, from a patient in this hospital, and as he was returning the knife, this gentleman put his hand forwards, and it entered just under the thumb nail. He left town for the south-western part of England; in a little time, he had an irritation about the nail, and a wart grew out from the spot where the puncture had been made. Being in practice, this was a disagreeable circumstance; it was frequently destroyed, but at each time it grew again. Afterwards he came to town, when he called on me, and told me the circumstance. I advised him to put on a blister, for the purpose of bringing away the nail, and, then, that the wart might be removed. He applied a blister, and readily removed the nail, but it also brought away the wart, and it never grew again. The other case of warts generating themselves was told me by a gentleman in Sussex. He was called to attend a lady in labour; he felt something in the vagina, which appeared unintelligible, and, on examination, found it to be a crop of warts. He delivered her, but did not say any thing about the warts to the lady. In conversation with the husband, he told him that his lady had a number of warts. The gentleman stated that at the time he was married he had a wart on the penis, and he had no doubt but that he communicated them to his wife. It is a common opinion that they are propagated by the blood; but do not entertain this idea—it is by the secretion of matter: Simple local irritation will produce warts. The secretion from the glandulæ odoriferæ, if not cleansed, will give rise to them, or any dirt between the penis and glands. The treatment is different, as the warts may be hard or soft. Soft warts readily bleed, and may be easily removed: the liquor. plumbi sub acetatis dilutus, applied to the surface of them, will

remove the soft warts; the oxymurias hydrargyri will soon destroy them. I have used the tinctura ferri muriatis, and the black wash and calomel, with good effect. The unguentum hydrargyri will soon destroy them, by producing irritation, inflammation, and a sloughing of the warts. The hard warts are more difficult to remove; they had better be poulticed first, and then touched with the unguentum arsenicale, which should contain a drachm of the oxyde of arsenic to an ounce of lard. A few of the warts should be touched with this application in the beginning, and afterwards the whole. It produces inflammation and sloughing of the warts. I scarcely ever use any thing else myself. Warts sometimes occur in females on the labia and nymphæ, of a size you would scarcely credit.

LECTURE LXIII.

GENTLEMEN, we shall proceed to speak this evening of syphilitic bubo, and venereal sore throat.

SYPHILITIC BUBO.

The venereal poison is taken from the chancre on the penis, to the glands of the groin; and, in its course, usually irritates one of them. Now and then the matter proceeds through them without producing any irritation, but more frequently it excites inflammation, and the common effects of inflammation, if it is not opposed; that is, if a proper treatment be not pursued, the gland inflames and suppurates. It commonly happens that only one gland is affected in either groin in syphilis; now and then the contrary takes place; but, in general, when several glands are enlarged, it is from irritation, and not from the absorption of the venereal poison. When there is only one gland enlarged, and it goes into a suppurating state, it is usually the consequence of the stimulus of the syphilitic virus. Therefore, you may conclude, if several glands be enlarged, that it is not the effect of syphilis. The symptoms produced when a bubo goes into a state of suppuration, are the same as those which take place in common abscess, with this exception, that there are evening exacerbations; and, in this respect, precisely the same effect is produced as when syphilis attacks any other part of the body, the exacerbations coming on in the afternoon, and generally lasting till two or three in the morning. The symptoms, then, are the same as those of common abscess, with the exception of evening exacerbations. When you are consulted about a bubo, you are led to suspect that it is venereal, by the following circumstances:—You ask the patient if he has a sore on the penis; if there be none, and he has never

had one, your opinion ought to be, that the bubo is not syphilitic. There is no example of venereal bubo ever having occurred without a sore. If there be no sore at the time you see the patient, you inquire how long it is since he has had one? If he answers, a week, a fortnight, or even three weeks ago, still the swelling may be syphilitic: it is not at all necessary for the sore to exist at the time the bubo appears, for the irritation of the gland may occur a fortnight or three weeks after the appearance of the sore. The swelling may be retarded from various circumstances, if the patient has a diarrhœa on him, or has taken opening medicine; these, and many other causes, may delay its appearance. The next circumstance to which you direct your attention is, whether the enlarged gland is situated at Poupart's ligament, or below it; you know that there are two orders or rows of absorbent glands in the groin. The first row is in the line of Poupart's ligament, extending nearly from the spinous process of the ilium to the pubis; but below this is another tier, situated at the distance of an inch and a half, or two inches, from the first. If the swelling be in a line with Poupart's ligament, you may decide that it is a syphilitic bubo; but you may determine that it is not syphilitic if it be in the lower order. When you see a swelling in the groin, about an inch and a half below Poupart's ligament, you inquire if there be any sore on the foot or leg, or any irritation on the back or nates; for, in such cases, the glands are generally affected. The lower order of the glands are more frequently affected from any irritation on the thigh and leg than on the back of the nates, because the greater number of the absorbents from these last parts terminate in the upper row of absorbent glands. You determine that it is not syphilitic if the swelling be in the lower row of the glands. When you are called on to treat a syphilitic bubo, you order the patient to take five grains of blue pill, combined with a quarter of a grain of opium, night and morning, with the same view as you give it in the chancre; the opium subdues the disposition to an irritable action being set up in the constitution by the mercury; and, when it is given in conjunction with the blue pill, you seldom have those dire effects from the syphilitic disease as when the mercury is given alone. Therefore, you will give the blue pill combined with opium. If you find the pain in the evening not subdued, you may give ten grains of the blue pill at night, and five in the morning. But, at the same time that you employ constitutional remedies, local means should not be neglected; evaporating lotions should be applied to the part, a bandage should be put round the waist, and a linen, wetted with a lotion, composed of an ounce of spirits of wine, to five ounces of water, should be kept to the swelling, and fastened by tape to the bandage. But, gentlemen, it some-

times happens, notwithstanding the means you employ, the pain, swelling, and the disposition of the gland to suppurate, increase; this will be known by sharp pains darting through the part, and a pulsating feel in it; for, when these occur, the suppurative process has generally commenced; you then apply evaporating lotion and leeches, give active purges, and omit the blue pill, or else you will make the bubo suppurate. Mercury (as you know), has the effect of hastening common inflammation, when it occurs in any part of the body to suppuration; therefore, it is wrong when any inflammatory disposition exists in the bubo to continue the mercury, for you will most probably induce suppuration, when you might have prevented it. Under these circumstances, it is right to employ lotions and leeches, and purge the patient. The best purges you can give are the mercurial, the submuriate of mercury combined with jalap: by this plan of treatment you get rid of the disposition to inflammation, whereas, if you continue the mercury, you will hurry the bubo into the suppurative process. When the pain in the part is subdued, you must return to the first treatment, which will correct the venereal action. It may be said in opposition to this, that you give mercury to prevent inflammation of the eye, as in irritis: this is true, but it is not desirable, even in that complaint, to affect the mouth to any degree; it is not that of mercurial influence which will cure the eye, for the mercury should be suspended when the mouth becomes affected; it is by increasing the secretion that the benign influence of the mercury is exercised.

It sometimes happens that the bubo attains considerable magnitude. When this is the case you must give up the use of mercury: never continue it when the bubo is large; it will only hurry it into a suppurative process; therefore, suspend the use of mercury, and endeavour to lessen the size of the swelling and inflammation by lotions, leeches, and acting on the bowels, in order to promote the secretions, for this should be your grand object in all these cases: take care, at the same time, to give that kind of nourishment which will best support the system, without producing an undue excitement. When a gland becomes of considerable size, it is usually the result of debility, and is very apt to become chronic; you should by all means discontinue the mercury, apply leeches, and you may gently stimulate the gland, so as to promote absorption; for this purpose the application of muriate of ammonia will be of use, at the same time giving purgative medicines. But in this enlarged state of the gland, although it begins in syphilis, mercury greatly debilitates the constitution. When suppuration has commenced, and the matter can be felt fluctuating, it is quite right to make an opening to let it out. The opening should be small, and ought to be made

as soon as any pus can be felt, for absorption will begin, and the size of the gland will soon be diminished; therefore, make an opening to evacuate the matter as early as you can detect fluctuation. My own opinion is, that when the suppurative process has commenced, the best plan is to open the swelling, which I always do by puncturing it with a lancet whenever the matter is formed; it is of no use to let it accumulate, for absorption of the surrounding parts will take place, and a large sore be formed. If the gland be opened as early as you can detect fluctuation, the surrounding swelling will be lessened, the inflammation diminished, absorption rapidly produced, and then you can return to the mercury for effecting the cure.

It sometimes happens that the bubo is exceedingly irritable: wherever you find it so under the use of mercury, immediately discontinue its use, for the more mercury you give, the worse the swelling becomes: abandon the mercury, and have recourse to other means; it is right in these cases to give opium, and the compound decoction of sarsaparilla; that is the plan you will find the best in irritable buboes. When the state of the swelling will allow, you can return to the use of mercury to complete the cure. It is only by the injudicious use of mercury that the very severe symptoms which occur after syphilis are produced. I do not believe that a syphilis itself ever produces them; no, gentlemen, they arise either from a defect in the constitution of the patient, or from the fault of the medical man. I do not believe that nodes arise from the syphilitic virus alone, but principally from the injudicious treatment of syphilis, where mercury has been incautiously administered, thereby increasing the irritability of the patient, and leading to worse consequences than the disease for which it was originally given. In order to subdue this irritable state of constitution, give opium and the compound decoction of sarsaparilla, which will have the power of lessening the irritability of the system, and relieving the patient. As to sarsaparilla being a specific for the cure of syphilis, you will find that it is *no* such thing; it has the power of suspending the symptoms of syphilis for a short time, but not that of curing them; and the surgeon who thinks that he has, grossly deceives himself and those who are the dupes of his ignorance. If he fancies that the patient is cured, because the symptoms disappear, and the patient does not return, he equally deceives himself; for, if he does not return to the same surgeon (which he seldom does when he has once been deceived by him), he goes to another, and so on, till at last it is difficult to ascertain whether his disease is from syphilis or from the various remedies which he has tried. What I should say is, that the improper use of mercury leaves a disposition in the constitution for the disease to return; and whoever has seen much practice

knows, that secondary symptoms are generally the result of a mistaken treatment of the syphilitic disease. Well, then, opium, and the compound decoction of sarsaparilla, will lessen the irritability of the constitution; and so far they are useful, but any further than this they ought not to be used. I say, that no surgeon who understood the nature of syphilis, and who had it in his own person, would trust to sarsaparilla for a cure. In fact, I would say, if he did (and you know that I use no milk-and-water expressions), that he was a blockhead. So long as I have the honour of addressing you, will I openly state my opinions to you. I am not come here to listen to the opinions of others, which I know to be wrong from the experience of forty years' practice, nor to be taught by beardless boys how to treat a disease, of which I have seen thousands and thousands of cases.

The next subject of which we shall consider is the

SLOUGHING BUBO.

If mercury be continued whilst the bubo is suppurating, as soon as ulceration takes place the sloughing process will follow, and extend over a considerable portion of the cellular tissue. Destruction of life in these cases is caused in two modes. Here are two specimens (exhibiting them to the class) taken from persons who died of sloughing bubo. In one, the femoral artery, vein, and sartorious muscle, are laid bare to a considerable extent. The one died from the irritation produced by the sloughing process; the other from hemorrhage, caused by ulceration of the femoral artery. Thus destruction takes place from two causes, from the extent of the sloughing process, and hemorrhage from the opening of the femoral artery. A person with sloughing bubo died in the hospital, about three years ago, from hemorrhage. In these cases you generally see that there is something faulty in the constitution, or that the patient has been injudiciously treated; as to the treatment of sloughing bubo, it is the same as in the sloughing chancre. Abandonment of mercury, exhibition of ammonia with opium, and a generous diet, so as to give vigour to the constitution, without exciting any febrile action; that is the constitutional plan of treatment which you should employ, and the local treatment principally consists in the application of the nitric acid wash, about fifty drops of the acid to a quart of water. It sometimes happens when the gland suppurates, and the sloughing process is going on, that secondary symptoms appear; it is not right to give mercury in consequence of their appearance, but you order the patient to take the compound decoction of sarsaparilla. When the sloughing process is stopped, and the wound is well, give mercury if the secondary symptoms remain; then, and not till then, ought you to

attempt the cure of the disease by the exhibition of mercury. When the sloughing process stops, and there are no secondary symptoms, do not give mercury. It is never right to employ it as it were by speculation; it will not destroy the venereal virus, although it is not in action, and will not prevent the appearance of the disease. Mr. Hunter was the first who pointed this out, that syphilis could not be prevented from appearing by the exhibition of mercury; and most surgeons state, that it is best not to give mercury in expectation of the appearance of the disease, but to wait till it does appear. I give you this rather as Mr. Hunter's opinion than my own: there are some points connected with this subject which I shall speak of when making some general remarks on syphilis. It occasionally happens that, when bubo suppurates, a sinus remains after the other part is healed. This may be often cured by an injection of about two grains of oxymur. hydr. to an ounce of water, or the undiluted tincture of lyttæ, which will generally bring on adhesive inflammation. If these should not succeed, you must depend on the use of a seton, or laying the sinus open; but this latter mode is very rarely adopted. It sometimes happens that a gland projects after ulceration has taken place: when a case like this occurs, when the gland is insulated, and rises above the surrounding surface, you get rid of it by means of small troches, made of bread and oxymuriate of mercury, pointed at the extremity, which are inserted into the gland, and allowed to remain there twenty-four hours: this generally brings on a little inflammation, the death of the gland, and its separation from the surrounding parts. I have known the sulphate of copper produce the same effect, but the first is generally the best. When a number of absorbent glands are enlarged, never consider the complaint as syphilitic: they are owing to a defect of the constitution, and never to syphilis. After a bubo has suppurated and ulcerated, it now and then assumes the character of what is called a phagedenic ulcer. If consulted about the nature and treatment of this kind of ulcer, what would you say? First, that phagedenic bubo is an ulcer, with the edges thin, rugged, loose, and irregular, owing to a morbid condition of the cellular membrane beneath it, which is in a sloughing state: you see in a phagedenic bubo, if you look attentively, that the cellular membrane under the skin is in a sloughing state. There is an increased number of blood-vessels, over which the skin hangs loosely, and the ragged edges of the sore are owing to a want of action in the part, the blood being retained in it on account of there not being sufficient freedom to carry it into the system. This kind of sore arises, then, from the cellular tissue, and it is difficult to give life to it, because it becomes considerably excavated, and the skin hangs loosely over it. The best treatment

that you can employ, is a saturated solution of the nitrate of silver: dossils of lint, wetted with this lotion, should be daily applied to the surface and edges of the wound, and the liquor calcis, with lime water, should also be used. Oil-silk should be put over the wound, to prevent it getting dry; for, if it becomes dry, there is great danger of the gangrene spreading; therefore, the part should be kept wet, and this you do by covering it with the oil-silk, to prevent evaporation. This, then, is the treatment of a phagedenic ulcer. Mr. Welbank, a surgeon, in Chancery-lane, has recommended the application of nitric acid in an undiluted state, with the view of forming a new surface. This gentleman has tried it with advantage, at the same time preserving the constitution by restoring the secretions, and supporting the patient by a most nutritious diet. You should give bark and ammonia, in combination with the opium; and do all that you can to restore the secretions, for this ought to be the first principle of your treatment.

DISEASES OF THE MOUTH AND THROAT.

The venereal poison, when it passes the absorbent glands in the groin, goes into the system, but, in its course, affects no other glands but these; it is carried through the thoracic duct to the blood, and, when in the blood, it appears to affect but three parts of the body: 1st. The mucous membrane of the throat and nose. 2d. The skin, or surface of the body. 3d. The periosteum and bones. These three are the only parts liable to the syphilitic action after the venereal virus has entered the blood; and, with respect to the organs essential to life, these are not capable of having a syphilitic action excited in them; only in those parts of the body subjected to the influence of external causes, is the syphilitic action observed; the internal organs are entirely free from it; the brain, the viscera of the chest and abdomen, are never affected by it; even the mucous membrane of the interior of the body is not affected by it.

I will now describe to you the appearance and consequences of the diseases of the throat. When the syphilitic action is set up in the mouth, either the mucous membrane of the floor of the nose, or the roof of the mouth, becomes red and inflamed, and a pimple forms on it; when this opens, the bony palate is exposed, which may be easily felt by applying a probe to the part: this is the manner in which the disease first shews itself. The exposed bone exfoliates, a communication is set up through the mouth and nose, fluids return through it, and the voice becomes nasal. In this disastrous state the unhappy patient is unfitted for society; with an aperture in the roof of the mouth, he has a discharge from it of a most offensive smell, to which the smell of the dissecting-

room is not to be compared; for I can assure you it is with difficulty that I can bear the breath of a person with disease of the mouth or nose; but, independently of this, he is stamped by a nasal voice, and the fluids which he takes returns through the communication set up between the mouth and nose. It is a state, gentlemen, to which death is far preferable; therefore, do not look on syphilis as a trifling disease. The tonsil glands become affected with sores, which have exactly the character of chancre, having rugged edges, a yellow surface, and a livid colour in the surrounding part. A sense of dryness is felt in the throat, which spreads up the eustachian tubes to the ear. But still worse effects of the disease are seen on the pharynx, just opposite to the mouth; it is not unfrequent that ulceration proceeds through it and the cellular membrane behind to the vertebræ; but the worst effect of all produced by the syphilitic action are found on the larynx, which require immediate attention as soon as they shew themselves; and in a short space of time, if not checked, destroy life. Attending this affection, there is always loss of the voice, so that you are obliged to put your ear to the patient's mouth, he speaks in so low a whisper. If he has no primary symptoms of syphilis on him at the time, you are not led at first to suspect that it is syphilitic; although, whenever a person comes to you with loss of voice, you should always ask, how long it is since he had any sore on his yard? What space of time has elapsed since he had syphilis?—This effect of the syphilitic disease more frequently destroys life than any other. Here is a specimen (exhibiting it to the class) taken from a female who died of this complaint. She was admitted into the hospital with a bronchocele; she had difficulty of breathing, and little power of utterance, which were attributed to the pressure of the tumour on the larynx. When she had been in the hospital a little time, syphilitic eruption made its appearance, by which it was discovered she had not very long ago had syphilis. Mercury was given her, but the disease had proceeded too far, and she died a few days after. On examining the throat, chancres were found, one on each side of the upper part of the larynx; there was no disease whatever of the lungs. The ulceration had proceeded to the laryngeal artery: this had given way, and part of the blood passed into the trachea. Portions of the thyroid cartilages are sometimes ossified in this disease, and coughed up. One of the cornua of thyroid cartilage was coughed up by a patient of Mr. Forster's, at the other hospital; it was converted into bone; the patient did very well.

The treatment required in syphilitic sore throat is as follows:—It will be necessary to make use of mercury if the part is not too irritable, and the sore has no other character than in a healthy person, and does

not affect the mouth more than is generally done when the syphilis appears in any other part. Here you must endeavour to prevent the disease making those dreadful ravages which I have described, on the soft palate and upper maxillary bone, producing an aperture which requires artificial means to close it. Mercurial fumigations are found the most efficient local means for sores of the palate; but if the roof of the mouth itself becomes affected, a little diluted muriatic or nitric acid will assist exfoliation, and prevent the aperture from being large. When the sores are on the tonsils, local means are not necessary, for a considerable portion of the tonsils may be lost, without any bad effects being produced; constitutional remedies alone are generally employed. But, with respect to myself, I am disposed to assist, by local means, the healing of syphilitic sores, wherever they occur. When an aperture has been produced in the roof of the mouth, I put a piece of lint into the opening, and the consequence is, that the person does not speak through his nose so much, and is not exposed to the observations of his friends. As soon as the exfoliation has taken place, it will be right to introduce some extraneous substance to fill up the aperture; and the best instrument I know is one contrived by Mr. Weiss, whom you all know to be an extremely ingenious man. A gentleman of rank and fortune, who had a fissure in the roof of the mouth, applied to Mr. Weiss, to know whether he could make him something which would fill up the opening, and remain there without producing inconvenience. Mr. Weiss immediately produced an instrument which gave him great comfort and satisfaction, and answers much better than any other with which I am acquainted.

When there is disease on the soft palate, nothing can be worn, because any instrument, unless kept near the bone, would excite inflammation. M. Roux, of La Charité, at Paris, in a case of division of the soft palate, performed an operation for the purpose of closing the aperture, on the same principle as the operation for hare-lip. The operation was successful; it is certainly a very ingenious one. I think a gentleman at the west end of the town has also performed this operation: if any of you recollect his name, I shall be obliged if you will mention it; (here several students stated that it was Mr. Alcock.) Mr. Alcock, then, gentlemen, has also performed this operation. Sir Astley then said, that he thought the union of a division of the soft palate had been attempted by some one else, when one of the pupils replied, "that it had been by Mr. Brodie." I was not aware that Mr. Brodie had performed this operation—are you sure of it, sir? This being answered in the affirmative, the learned professor said that the operation similar to M. Roux's had been performed by Mr. Alcock, and (I must, however, mention my friend Mr. Brodie's name on

authority, pointing to the student who first mentioned it) by Mr. Brodie.

With respect to affections of the larynx, you must act immediately on the system by mercury; I use the oxymurias hydrargyri, because it is the quickest in its operation. Mercurial fumigations locally, and the oxymurias hydrargyri internally, these are what I now employ. Some give the blue pill and opium, but I prefer the oxymuriate, on account of its speedy effect.

LECTURE LXIV.

The next subject to which I shall direct your attention is the influence of

SYPHILIS AFFECTING THE NOSE.

The mucous membrane of the nose is liable to be affected by this disease, as well as the mucous membrane of the throat. Ulceration in this part very speedily affects the bones, which afterwards exfoliate, and the patient will be in danger of losing a considerable portion of his nose. The following are the symptoms which indicates the existence of this disease: The first circumstance of which the patient complains, is an incrustation forming on the nose. On this incrustation being removed by the hand, a quantity of blood mixed with purulent matter is discharged. In two or three days, similar incrustations are formed, and under these an ulceration takes place, which frequently lays bare the bone, and occasions the process of exfoliation. The bones very often separate by exfoliation, long after the syphilitic action has ceased. The number of bones which separate in this way is often very considerable: there is a preparation on the table, in which you will have an opportunity of observing a number of bones, which separated from the nose by exfoliation, in the same individual. Here is another example, in which the disease also made considerable progress in this part. The treatment of syphilis in the nose, is similar to the treatment of it in other parts of the body. The constitutional treatment is precisely the same, but, in addition to the constitutional treatment, local applications should be employed. Fumigating the part is attended with some advantage; injecting lotions are also sometimes found to be beneficial. Lotions of diluted nitric, or muriatic acid may be used with a view of healing the sores, and assisting the process of exfoliation. Fumigations are used in clearing the nose of the accumulated incrustations. Steaming the nose with hot water, assists in separating the incrustations, and affords con-

siderable relief to the patient. Such is the treatment under ordinary circumstances. If the bones of the nose have not become affected, there will be no great difficulty in conducting the cure, but there are cases in which very considerable difficulties will be encountered, and in which the most horrible deformities will frequently be the result. In general, you are to consider these deformities, as the result, not of syphilis, but of the improper treatment of that disease. I will tell you what very often happens in cases of syphilitic disease in the nose. The patient undergoes a mercurial treatment, and the sores appear to be cured; but, when the mercury has been left off for a time, and the person has returned to his ordinary employments, he finds the discharge again appearing in the nose, and, as it becomes offensive, applies to a medical man. Under such circumstances, it is frequently supposed that, though he has undergone a treatment which is usually sufficient for the cure of syphilis, the disease is not yet completely subdued, and he is put under a second course of mercury. This, gentlemen, is not only unnecessary, but extremely injurious to the patient. The disease of the nose is not the result of syphilis, but it arises from the process of exfoliation in an exposed portion of bone. During the time the mercury is given, the sores heal, and the bone becomes dry. There is no discharge at this period, but after a time the process of exfoliation produces irritation and ulceration of the mucous membrane of the nose, which is generally, but erroneously supposed to be syphilitic. If the patient, time after time, be subjected to fresh courses of mercury, these add to the mischief, and the most horrible deformities often ensue. The mercury, instead of assisting the exfoliation which is going on, adds to the inflammation, and produces other and most extensive exfoliations. Under proper treatment, no person, perhaps, ever lost his nose from syphilis, but the instances are very numerous in which this loss has arisen from the abuse of mercury. To prevent the great deformity which will arise in such cases, if an opening be formed through the skin in the upper part of the nose, a probe should be introduced, to feel for the loose ossa nasi, which should be removed by a pair of forceps. The nose will be somewhat altered; there will be some deformity, but not that horrible deformity which ensues, if the skin is allowed to give way in the upper part of the nose. Evaporating lotions should at the same time be employed, to prevent ulceration taking place through the skin. I witnessed, very early in life, a most unfortunate case of disease of the nose, which was occasioned by maltreatment, and which ruined the happiness and prosperity of the individual in whom it occurred. This person had embarked in business with the greatest possible degree of success, and his prospects were of the most flattering description. He retired, for a time,

from his business, in consequence of a sore in his nose (accompanied with incrustations) which was believed by his surgeon to have been in the first instance syphilitic. A slight mercurial course was employed for his cure, and he got apparently well; but a short time after, the discharge from his nose returned. This led the surgeon to think that he had not been completely cured, and he accordingly put him upon a second course of mercury. Extensive exfoliations took place, and the bridge of his nose was sunk. Under these circumstances, he was ashamed of appearing in business, and was under the necessity of consigning it to other hands. The disease of the nose was still not entirely subdued, and he was put under a third course of mercury. This led to the inflammation of the skin, the ossa nasi separated through it, and the most horrible deformity was produced. The state of his breath, and the smell issuing from his nose, were most offensive; he was obliged to seclude himself entirely from all society, his prospects in life were completely ruined, his business went to decay, and he died in poverty and wretchedness. As these circumstances occurred to a man in a higher state of society than that in which we usually meet with such deplorable cases, they made a strong impression on my mind. Be upon your guard, therefore, against treating a renewed discharge from the nose as syphilitic, on the supposition that the mercury previously employed has not been sufficient to subdue the disease.

The next subject of which I shall speak is that of

SYPHILITIC ERUPTIONS.

Syphilitic eruptions are the mildest of the secondary symptoms of the venereal disease, and, in general, admit of an easy cure. The common character of syphilitic eruption is, that they are of a copper colour, rising a little above the surface of the skin, and, if they go on to ulceration, form thick incrustations. They are attended with very little pain; an itching, rather than a painful sensation, is felt in the part, which increases a little in the evening. There is a great variety in the character of venereal eruptions, with respect to size; in fact, you very rarely see the eruptions in one patient exactly like those which occur in another. Go round the syphilitic wards to-morrow, and examine the appearances of the eruptions in the different patients who have that symptom; you will scarcely find them exactly alike in any two patients, in point of colour or of size. In some, you will find the eruptions of considerable magnitude, appearing as if a portion of copper skin was laid down upon the surface, but unattended with ulceration. In others, you will observe deep ulceration, with a very ragged edge; in others, there will be scaly eruptions, covering very large surfaces in various parts of the

body. There is greater variety in the character of venereal eruptions than in any other symptom of the disease. You may satisfy yourselves of this fact by going round the hospitals, and at the same time appreciate the pretensions of those persons who ascribe one uniform character to this symptom of the disease. With respect to the parts in which venereal eruptions most frequently appear in the first instance, they are the head, face, and roots of the hair. Incrustations form about the hair of the head, and scabs appear on the forehead, breast, the palms of the hands, and sometimes the soles of the feet. The palms of the hands are more frequently attacked with venereal eruptions than other parts of the body, because there is more vigour of circulation in these parts; the parts where the circulation is more feeble, are less liable to be attacked. The treatment of venereal eruptions is of the most simple kind. You will pursue the same constitutional treatment that I have already advised; give ten grains of the blue pill united with opium, at night, and five in the morning; or five grains at night, and five in the morning. The pilula submuriatis hydrargyri composita, or Plummer's pill, combined with the decoction of sarsaparilla, is sometimes employed for the cure of this venereal symptom. Five grains of Plummer's pill may be given at night, and half a pint of the decoction drunk daily. The compound decoction of sarsaparilla will remove this symptom for a time, but the disease will re-appear, and you are never sure that the patient will not return with syphilitic symptoms. Even Plummer's pill, united with the compound decoction of sarsaparilla, unless it be continued for a very considerable time, cannot be depended upon. It should be given from six weeks at least to two months, to prevent a return of the disease. The eruptions will often yield in a very short time, but, unless you continue the medicine till the syphilitic action is destroyed, the disease will return. Nothing can be more absurd—nothing can show a greater ignorance of the true principle of treatment which should be followed in this disease, than to suspend the use of the medicine, as soon as the symptoms disappear. Venereal eruptions sometimes show an irritable disposition, as well as other symptoms of the disease from which the parts will be in danger of sloughing. Whenever this irritable disposition appears, suspend the use of mercury, and give the compound decoction of sarsaparilla alone, in considerable quantities. It will be better not to combine the decoction with mercury in any form; if you add any thing, let it be opium and nitric acid. The opium lessens irritability, and the nitric acid has sometimes a specific action on sores of this kind. Irritable eruptions are very often improved by the exhibition of nitric acid, which not only has a specific effect on them, but restores the general health of the

patient. If the opium disagrees with the stomach of the patient it will defeat the object of restoring his general health, and in that case should not be combined with the nitric acid. With respect to local treatment, the best application is mercurial ointment with opium; an ounce of the ointment, with a drachm of the extract of opium. This, and the nitric acid lotion, diminish irritability better than any other application. The epithema, composed of the liquor. plumbi subacetatis with the mel rosæ, and tinctura opii, is often found to be useful. Carrot poultices, the solution of the nitrate of silver, and a great variety of applications, are employed with the same view.

I shall now proceed to describe to you the

SYPHILITIC DISEASES OF THE PERIOSTEUM, AND BONES.

The third effect of the syphilitic poison is on the periosteum, and on the bones. It first attacks the periosteum, and the bones subsequently become affected. The cylindrical bones, which are most exposed to vicissitudes of temperature, are commonly first attacked; those which are much covered by muscle are rarely affected. The back part of the tibia, for instance, which is covered by muscles, is very rarely affected with nodes, though nothing is more common than to see venereal nodes on the shin bone, which is only covered with skin and periosteum. Sometimes they are seated on the outer side of the tibia, towards the fibula: if they are seated on the fibula, it is where it is only slightly covered; and if on the ulna, it is where it is covered only by skin and periosteum. Nodes on the os humeri, except on the outer side, are of a very rare occurrence. The symptoms by which this disease is characterized, are as follow:—Some weeks after the chancre has healed, the patient experiences in the evening a sensation of pain in the bone, which is afterwards the seat of the node. This pain does not immediately produce a swelling; but, in the course of a few days, a swelling appears in the evening, which disappears again on the following morning. It is excessively tender and painful in the evening; but in the morning, it is hardly perceptible; there is scarcely any swelling or tenderness. At this time the periosteum only is affected; but, when the inflammation has continued for some time longer, the bone is affected and soon becomes enlarged. I shall send you round two preparations, in which you may observe the thickening of the periosteum, and the enlargement of the bones produced by syphilis. The first effect is an inflammation of the periosteum; but, in a short time, a deposit takes place between it and the surface of the bone; this deposit is, in the first instance, only a serous fluid, but a cartilaginous substance is soon secreted, which is gradually converted into bone. Though, in the first

instance, therefore, there is only an inflammation of the periosteum, the fluid secreted in consequence of this inflammation is soon converted into an ossific enlargement. The treatment of this disease is not different from that which is necessary for the other symptoms of syphilis. Give the blue pill united with opium; the compound decoction of sarsaparilla is sometimes added, with a view of preventing any disposition to irritability in the diseased part. This, however, is not necessary; the blue pill, with opium, will be sufficient to effect the cure. As to any local treatment, no other will be necessary, except the simple application of evaporating lotions, which certainly assist in getting rid of inflammation. When the inflammation has ceased, if there is any enlargement of the bone, a stimulating plaster, as the emplastrum ammoniaci cum hydrargyro, should be employed. There is on the table a great variety of preparations, exhibiting specimens of nodes, which will be worth your examination after the lecture. The skeleton on the table affords a curious illustration of the effect produced by mercury on the bones. Though the treatment of nodes, when attended to early, is very simple, cases sometimes occur in which considerable difficulty arises. You will sometimes find a considerable quantity of serous fluid fluctuating between the periosteum and bone. When this fluctuation is unaccompanied with inflammation and redness of the skin, there will be no necessity to cut down upon the bone; if you do so, you will run the risk of producing exfoliation. Such a fluctuation as this may be removed by adding a little to the influence of mercury. I have seen large accumulations of serum in the forehead and shin-bone entirely absorbed by giving an additional quantity of mercury, and assisting absorption by the application of a blister. When the fluctuation, however, is accompanied with an appearance of redness in the skin, and much pain in the part, indicating the presence of matter, it will be impossible to promote absorption by any means, and the sooner an incision down to the bone is made the better. The exfoliation which will afterwards take place, will be proportioned to the extent of surface laid bare; and if you delay making the opening till the extent of the surface affected is very considerable, you will only be adding to the evil. As soon, therefore, as you discover a fluctuation, accompanied with redness of the skin, make an incision for the purpose of discharging the matter. Very extensive exfoliations sometimes follow the opening of nodes, and the life of the patient will be in danger. Many persons die from this cause; there is in the college a very fine specimen, taken from a person who died in consequence of the exfoliations which followed the openings of nodes in both his tibiæ. The flat bones are sometimes the subject of syphilitic symptoms; that which is more

commonly affected than any other, is the os frontis. The symptoms are the same as those of nodes on the shins. The patient has pain and swelling in the evening, which last till two or three o'clock in the morning, when they disappear. This continues, day after day, until an enlargement of the bone is produced. Nodes now and then occur in the parietal bones, very rarely in the os occipitis, and never in the os temporis, that bone being much covered by muscles, and exposed to very little change of temperature. The os frontis, which is the most exposed of the bones of the head, is that in which the disease is most frequently seen. It sometimes happens, when this disease attacks the flat bones, that it is attended with a very considerable tumour and fluctuation. No incision should be made under such circumstances. Now and then, indeed, the suppurative process takes place, and a most serious disease is the result. When the skin is inflamed, and matter is formed beneath, it will be right to discharge it. It often happens, when matter is formed on the surface of the bone, that the suppurative process also takes place between the dura mater and the internal part of the skull. Death sometimes ensues from this cause; but fatal consequences may often be prevented by trephining the patient. A patient in the other hospital had a node on the os frontis, which suppurated: the matter was discharged, but some time after the patient complained of violent pain in the head, which was succeeded by coma, so that there was no doubt in the mind of the surgeon of the hospital that the patient was the subject of pressure on the brain. The surgeon determined to trephine him; and, on raising a portion of exfoliating bone, a quantity of matter directly issued beneath. The old surgeons were in the habit of perforating the bone, for the purpose of discharging the matter formed beneath. The best mode of saving the life of the patient, however, is to apply the trephine: and, by taking out a portion of the exfoliating bone, give immediate relief to the brain, by removing the pressure produced by the matter formed between the dura mater and the bone. There is a specimen on the table, taken from a case in which the operation was successful. The man died, many weeks after the operation, in a comatose state; and, upon examination after death, it appeared that matter had formed under the sagittal suture, which pressed upon the brain, and was the cause of death. He was relieved by the first operation, and he would probably have been relieved again by similar treatment, but there was not sufficient evidence of the existence of matter to justify a repetition of the operation. Whenever you are called to a case in which exfoliation of the bones of the skull is accompanied with symptoms of pressure on the brain, you may infer that

matter has formed between the dura mater and the bone, and it will be right to apply the trephine. This observation applies not only to cases of syphilitic diseases, but to all cases of exfoliation of the bones of the skull, accompanied with coma. Here is a skull (exhibiting it to the class), originally affected with syphilis: see, gentlemen, what a lantern it became. The subject of this disease died, as I believe, chiefly from the injudicious continuance of mercury. He was a man of bad constitution, and there was great difficulty in curing the primary symptoms of the disease. He had, subsequently, a node on the forehead, which was followed by inflammation and suppuration of other parts of the head, till the ulcerative process extended over the whole surface. He died ultimately of anasarca. It can scarcely have escaped your observation, that patients applying for admission to the hospital frequently complain of having pains all over them. They will tell you that they have pains down their arms and legs, which become worse at night when they are warm in bed, and that they have formerly had some venereal complaint, for which mercury has been given till the mouth has been rendered severely sore. If you ask them whether they were exposed to cold during the time they took the mercury, they will answer in the affirmative. Such persons, gentlemen, we do not admit into the hospitals: we only tell them to take care of themselves, and to keep themselves as warm as possible, and that, after a time, the disease will disappear. These pains are readily distinguishable from those which proceed from the syphilitic poison. Syphilitic pains commonly attack the shins, but they never put their hands to this part of the body. They complain of pains from the upper to the lower part of the arm; pains about the chest and about the hips. These are mercurial, not venereal pains. You have an opportunity of seeing an example of this disease in the skeleton on the table, in which the mercury has affected the ribs, the sternum, the tibia, and, in short, almost every bone in the body. A deposit of earthy matter is formed between the periosteum and the bone, so as to case the surface of the bone. Patients suffer exceedingly from mercurial diseases of the bones, much more indeed than from syphilitic. You should direct them to pay strict attention to temperature, and give them the compound decoction of sarsaparilla. This plan of treatment will be sufficient for the cure of this disease. I shall, in the next evening's lecture, close the subject of syphilis by some general remarks on that disease.

LECTURE LXV.

I SHALL, to-night, deviate from my usual custom, and give this evening's Lecture from notes. The subjects of it will be,

GENERAL REMARKS ON SYPHILIS, AND ON THE USE OF MERCURY.

The symptoms of syphilis are divided into *primary* and *secondary*. Chancre and bubo come under the former denomination; and, under the latter, sore throat, eruptions, nodes, and diseases of the nose: these secondary symptoms are the consequences of the absorption of the venereal poison into the system, and its circulation through the blood.

Some parts of the body are incapable of being acted upon by the venereal poison, as the brain, heart, and abdominal viscera; indeed, the venereal poison does not appear to be capable of exercising its destructive influence on the vital organs, or those parts most essential to the welfare and continuance of life; but the bones, muscles, tendons, and skin, readily partake of its malignant nature. As some parts of the body more readily take on the venereal action than others, so some individuals are much sooner than others infected by the venereal poison. Many men (to their shame be it spoken) make a boast of having kept every description of female society, and yet having always escaped from any attacks of the venereal disease, gonorrhœa as well as chancre.

The time at which the secondary symptoms usually appear, is from eight to sixteen weeks generally, sometimes between those two periods; eight weeks may be taken as the earliest period, and sixteen as the most remote; but, in both respects, there is a large number of exceptions, for the secondary symptoms are continually appearing at an earlier date than the eighth week, and at a much later one than the sixteenth. As a general remark, I may observe, that the tenth week is the most usual time at which they appear; sometimes the appearance of the secondary symptoms is protracted, in consequence of the system labouring or suffering under the irritation of another disease, as diarrhœa for example. In my notes I have written down a number of questions, and which questions I used to be in the habit of putting to myself: you shall now hear what they are; and first, *Is a child liable to be affected by syphilis when in utero?*—Mr. Hunter said, that a child in utero could not be affected by this disease: now, Mr. Hunter was, unquestionably, a man who possessed so much judgment in his profession, that his opinions are entitled to the greatest respect and attention; he is an authority to which we are all inclined to bow with deference and sub-

mission. We must not, however, think too highly of his opinion in opposition to facts, which we have ourselves observed; and, if I know any thing of my profession, I have seen syphilis in a child immediately after birth; therefore, in this particular instance, Mr. Hunter was mistaken. Within twenty-four hours after their entrance into the world, such children have the palms of their hands, the soles of their feet, and the nates, covered with copper-coloured eruptions, and the nails, at the same time, generally beginning to peel off; and unless something be done for the little sufferers, they will be quickly carried off from the violence of the disease; indeed, many children die from it, in consequence of the true nature of the complaint not being understood by the medical practitioner. In these cases you give the mother a quantity of mercury, the influence of which is communicated to the child, through the medium of the milk, and it becomes cured of the syphilitic disease.

A most curious circumstance connected with this subject is, that a woman, when pregnant, cannot be cured of syphilis: you give mercury, and cause the disappearance of the primary symptoms; but, after delivery, the secondary effects are very soon manifested in different parts of the body; the primary symptoms, therefore, are relieved as quickly as usual, but it is evident that the poison is not eradicated from the constitution, by disease breaking forth immediately after the birth of the child. I once saw a lady, six months advanced in pregnancy having an extensive syphilitic eruption, for which mercury was administered, and the eruption disappeared: after this she went her full time, but when delivered, the nates of the child, together with the palms of the hands and the soles of the feet, were covered by a genuine syphilitic eruption. I gave the child hydrarg. cum. cret.; under this treatment it manifested little improvement.

A month afterwards I saw the mother; she had an ulcerated sore throat and syphilis, altogether as well marked as in any case I ever witnessed; mercury was again given to her, when both parent and child perfectly recovered. Since the occurrence of the above case, I have witnessed several similar ones, in each of which the secondary symptoms could not be completely cured during the pregnant state. I think, however, that a pregnant woman may be cured of the primary syphilitic symptoms, although not of the secondary.

The next question I have put down in my notes is this:—*Does much Inflammation usually attend Syphilis?*—No direct answer can be given to this question, for the degree of inflammation which attends it is proportioned to the healthy or irritable state of the patient. In a healthy person the venereal disease is slow in its progress, and but little inflammation accompanies it: on the other hand, in the irritable person it is

rapid in its progress, and accompanied by considerable inflammatory action; therefore, the differences which characterize the syphilitic disease in various persons do not arise from any peculiarity of the poison itself, but from the peculiar condition of the person on whom it falls: exactly similar to what often happens in small-pox: two men receiving the infection from the same individual shall have the disease, one particularly mild, while, in the other, it is of a malignant confluent kind; therefore, the degree of inflammation, or manifestations of violence, which mark the course of the disease, are not to be attributed to any peculiarity existing in the poison, but solely from the particular condition of the infected person. Although syphilis is not at first a malignant, yet it must always be considered a serious complaint, and should command the most decided attention. Though not at first malignant, consisting merely of chancre or bubo, it soon becomes so, and, unless its progress be checked, it will be marked by the secondary symptoms, which I have already described.

Therefore, in answer to the question just now put, what I should say is this—one constitution, upon receiving the venereal poison, will have in it a considerable degree of inflammatory action excited, quickly leading to the destruction of life, whilst another constitution will scarcely be influenced by the reception of the venereal poison. The next question I ask myself is, *Whether there is any Constitutional Affection produced in Syphilitic Disease?* I am again compelled to say, that that great authority, Mr. Hunter, is also wrong here; for he has stated that the disease is merely local. What, gentlemen, should I say if one of you were to come to me to-morrow, stating that you had a chancre about eight, nine, or ten weeks ago, and that you had felt yourself exceedingly indisposed, having evening exacerbations, fever and sore throat, and that at length your body had become covered with a copper-coloured eruption; how can we say that there is no constitutional affection here? Do not the evening's exacerbations, which commence about five o'clock, and do not terminate till two, or later, in the morning, plainly shew that the disease, when so far advanced, is constitutional? Most certainly it is so, and can scarcely be any longer a matter of dispute.

It is not necessary that you should study much, for the purpose of being enabled to understand this constitutional influence: go to-morrow into the foul wards of these hospitals, find any man there having venereal sore throat; you will ask him but very few questions before you are convinced that the constitutional influence has been produced. The next question I have put down is, *Whether the Matter of secondary Venereal Ulcer be infectious or not?*—Mr. Hunter said that it was not so; however, for my own part, from what I have both seen and heard,

I should hesitate a considerable time before I could join in this assertion. A physician of my acquaintance witnessed the following case :—

A gentleman came from the country in an exceedingly anxious state of mind, and evidently very much agitated, for the purpose of consulting him respecting an eruption which existed on the body of his lady ; accordingly the doctor visited the lady, and found the eruption to be venereal. The doctor asked the gentleman how long he had been married, and he replied, six months : he added, that four months before marriage he had a sore on the penis, which was healed by local applications : three months after marriage both his wife and himself had had sore throats, which were soon cured by taking mercury. During this time, and during the existence of the venereal eruptions, not knowing the nature of the complaint, the connubial intercourse had been continued. Now, if any dependence can be placed upon the report of this gentleman, the case is most decisive of the matter of secondary ulcer being capable of propagating the disease, for he had no primary symptoms by which the complaint could have been communicated to his wife, as the chancre was healed four months previous to marriage. I do not know, but I believe the disease may be communicated through the influence of the parent's or the nurse's milk. I believe that I have seen examples of this description.—*Is the Matter of Bubo infectious ?* —Not so far as experiments have gone. The matter of bubo inserted in the skin has produced no appearance of chancre ; for my own part, I think there is but very little difference between the matter of bubo and that of common abscess.—*Are Gonorrhœa and Syphilis the same disease ?*—On this point there is no difficulty for any one to satisfy himself, and he will soon be convinced that there are no two diseases in the world more decidedly different. Now, gentlemen, to prove this, let a man who has had a very bad gonorrhœa apply four or half a dozen of leeches near the glans penis, and then draw over the skin, so that the sores made by the leeches may be imbedded in the gonorrhœal matter ; well, gentlemen, will chancres be the consequence ? Will secondary symptoms ensue as consequences of the experiment ? No ; neither one nor the other will be seen, and one cannot well conceive a more conclusive fact than this.

Mr. Thurston, in 1801, made the following experiment on a young Cantab, who had gonorrhœa in an excessive degree, with ardor urinæ. Mr. Thurston took some of the discharge, and introduced it into the prepuce ; he inserted it in two places, thus making two sores ; both wounds, however, healed kindly, without producing the slightest appearance of chancre, or the most trivial constitutional symptoms. After such experiments as these, it would be madness to say the two diseases

were alike; and those persons who think so entertain wrong notions of the subject, or, unfortunately, their minds may be governed by prejudice, and consequently are incapable of receiving proper impressions. Let me urge you, therefore not to continue to think that gonorrhœa and syphilis are the same disease. The next question is this: *Are those parts of the Body, which are liable to Syphilis, subject to other Diseases similar in appearance to Syphilis?*—Yes; the glans penis, for example, is subject to ulceration from various causes, and the ulcers, occasionally, very much resemble chancre: this last sore, however, often possesses a specific character, by which its true nature can, with the utmost correctness, be ascertained. Although you are frequently enabled to determine that a sore is really chancrous, and are thus capable of confidently asserting that it is syphilitic, yet, at the same time, there is often great difficulty in saying what is not so; for example, excoriations may exist on the glans, to which syphilitic matter may have been applied, and the poison may have entered into the constitution through the medium of those broken surfaces, without having time to produce in the sores themselves the true syphilitic character; if, therefore, a patient were to come to you under such circumstances and after having had connexion with a suspicious person, if he were to inquire of you whether the sores were syphilitic or not, you had better explain to him what I have just stated to you, and likewise tell him, that although the ulcers have not then the syphilitic aspect, yet that he may in reality be infected, but that there has not been sufficient time for the parts to assume their peculiarly marked syphilitic character; tell him to make his mind easy, watch the appearance of the parts, let him wait and see the result, without subjecting himself at all hazards to a course of mercury, for the cure of a disease which never required its employment. Mercury, itself, unfortunately produces diseases very similar, both in appearance and effect, to syphilis. I recollect, at the commencement of my studies at these hospitals, one day, on going round the wards with a surgeon, having been very much surprised to see mercury so indiscriminately employed, and at seeing every poor emaciated wretch continually rubbing in; there was one individual, I remember, in a dreadful state, who had been using mercury for a great length of time, and under which treatment he continued to get rather worse than better; in this case I took the liberty of suggesting the propriety of discontinuing the mercury, when, in a short time, the patient became completely cured. Mercury, in reality, when given injudiciously, or to excess, will sometimes produce ulcers, which a man of little experience would say were venereal. Again, in ulcerated sore throats, a careless observer might mistake common ulcers for venereal ones; the

former, however, are known to be superficial, and may generally be removed by ordinary purgatives, whereas, the latter are deep, with elevated edges, having the same appearance as chancres on the penis. I recollect a gentleman once coming to me, and standing before me as well as he could: "Pray, sir," said he, "what do you think is the matter with me?" "What?" said I, "why, you are poxed up to the eyes;" seeing him in such a state, this was my involuntary reply; not the most elegant, certainly. I told him that he was not then in a fit state to take mercury, being emaciated, and in a state of great irritability, and that he had better, for a time, go to the sea-side, use the warm bath, and then return to me again. Some time after he did return to me, so much altered that I did not know him, for he was looking florid, and had grown quite lusty. He told me that he had come back perfectly recovered, without having taken a single grain of mercury; therefore, gentlemen, when you see disease situated in those parts liable to syphilis, you should be particularly cautious in forming your judgment, and take care not to submit your patient to a course of mercury, which will probably render his condition a thousand times worse. Before you administer a course of mercury, you should possess the most unequivocal evidence of its being required: and when you are in doubt as to the nature of those diseases which resemble syphilis, your best plan will be to administer five grains of the pill hydrarg. submur. compos. omni nocte, et ℥viij. decoct. sarsaparil. compos. two or three times in the day. These medicines will be found the best for the cure of the disease upon the principle of restoring the secretions.

The next question is, *Is Syphilis always progressive without the use of Mercury?*—The answer will be found in the reply to the following question: *Is Chancre curable without the use of Mercury?*—To this I reply, that mercury is by no means necessary to procure the healing of the chancres, at least not always. Some chancres certainly will not heal without mercury, and this is more especially the case when they are deep seated, or of long standing; but, on the other hand, when the sore is slight, superficial, and recent, a wash composed of brandy and water, or wine and water, will often cause them to heal without any other application; therefore, mercury is by no means always necessary to procure the healing of chancres; but chancre, as described by Mr. Hunter, according to his account, will not heal without it; it is now, however, well known that the position taken by Mr. Hunter is untenable, and that mercury is not in every instance necessary to accomplish the healing of chancres.

On the Influence of Mercury on the Human Body.—The modus operandi of mercury has been supposed to be, that of exciting in the system a general fever, which overcomes and subdues the syphilitic

action. This may or may not be true. God only knows. We are well acquainted with the fact, that many medicines have a specific influence over certain diseases; but we know nothing of the peculiar mode of action on the part of the medicine by which it overpowers and destroys the disease. Would not a man be laughed at, who attempted to point out the manner in which bark cures ague, or colchicum gout? In the present state of our knowledge, it is impossible, satisfactorily, to account for these phenomena; sufficient experiments have not yet been made to guide our judgment, or direct our minds towards a correct and positive conclusion. To possess satisfactory information on this point may be desirable; but I consider it of much more consequence to know how to effectually cure a disease, and prevent its return. I say, if once a surgeon permit the secondary symptoms of syphilis to appear, that it is difficult to say where the dangerous consequences will terminate—difficult to point out what may prove the sequel. Gentlemen, I can tell you that, twenty years ago, it was considered a great disgrace to a surgeon to permit secondary symptoms to appear: at that time the great object was to effectually cure the primary symptoms, so as altogether to prevent the occurrence of the secondary; unfortunately, at the present time, secondary symptoms present themselves to our notice, and much more frequently than twenty years ago. I will tell you how it happens: practitioners, at that period, were in the habit of giving mercury in every case of venereal disease, whether primary or secondary, and administered the remedy with a regularity and caution which I wish were observed at the present day; they used to exhibit the mercury not only whilst the disease lasted, but for some time after it had disappeared; and their usual practice was to give it, three weeks for chancre, a month for a chancre and bubo, and, if for secondary symptoms, the remedy was continued for a still longer period. Though the disease should disappear quickly after beginning the mercury, yet remember that it is not cured, and the medicine should be continued for the above-mentioned period. If the medicine be omitted for two or three days, you should consider this as so much lost time; and it must not be forgotten in the aggregate account. Three weeks will be generally found a sufficient length of time for the cure of a chancre; a month for a chancre and bubo; and, in case of secondary symptoms, the patient will not be safe until the expiration of five or six weeks. Persons often go to medical men with chancres, receive from practitioners a box or two of pills, and are then sent about their business. A man had better never visit a doctor at all than be submitted to such treatment as this: it is often calculated to throw him off his guard, may lead him to suppose he is

cured, when in reality he is not so, and may ultimately terminate in the complete destruction of his constitution.

Semetimes mercury disagrees with the patient; then, of course, you must either discontinue it, or temper it by combining it with some other medicine calculated to prevent its disturbing the constitution, if the patient be too irritable to take mercury; and, should you find this to be the case, cease for a while to administer it, improve the general health, and its employment may be again resumed. I may here observe to you, that, when a man is in health, mercury will generally agree with him very well; but if feeble or irritable, it then often introduces sloughing, and severe constitutional iritation.

The best form in which mercury can be given is that of the blue pill, ten grains at night and ten in the morning; ten at night and ten in the morning is the utmost extent to which the dose should be carried; in ordinary cases ten grains at night and five in the morning will be found quite sufficient: should the mercury produce diarrhœa, a quarter of a grain of opium should be added to every five grains of the blue pill. As the compound decoction of sarsaparilla assists the action of the mercury, half a pint of it may be taken two or three times in the course of every day, while under the mercurial influence. As to rubbing in the mercurial ointment, it is seldom done perfectly, and is not often adopted, except where the internal exhibition of the medicine occasions so much disorder of the stomach and bowels, that it cannot be introduced into the system any other way. About the time that I commenced practice (not hospital practice), a woman mentioned a curious circumstance to me, which was, that she had been taking mercury, and that it had occasioned the salivation of her child, without having produced any obvious effect upon herself. Another curious circumstance is, that no mercury can be found in the blood or secretions of those who are in a state of salivation. I sent to Mr. Allen a pint of blood taken from a salivated person, I also sent him a quart of saliva ejected by a person in a similar state, and also a quart of urine, with a request that he would subject them to the most minute chemical analysis, for the purpose of discovering whether any mercury could be detected in either, yet not an atom could be discovered; now you all know that a thousandth part of a grain of the oxymuriate of mercury might be detected in water or in blood.

The last circumstance, connected with this subject, to which I shall call your attention, is the most important of all, and which is this, viz. —*Is any other Medicine but Mercury capable of curing Syphilis?*— Remedy after remedy has been sent forth to the world, as having the

power to effect this; and now I will tell you all that I know respecting the matter. Mr. Rose, late of the Guards, now an eminent surgeon at the west end of the town, about eight or ten years ago, very laudably tried numerous interesting experiments for the purpose of attempting to cure the venereal disease; also with a view to ascertain what number of persons would be affected by secondary symptoms if the mercury was not employed. Mr. Rose found that the primary symptoms of syphilis could be readily cured without the aid of mercury; and that out of every three patients so treated, one was afflicted with syphilitic secondary symptoms.

Now, gentlemen, I saw Mr. Rose upon the subject; he is a very sensible candid man, and upon whose experiments the utmost reliance may be placed; another surgeon says, that two out of every nine have secondary symptoms, making one out of every four and a half. I rely, however, upon the statement made by Mr. Rose. If secondary symptoms did present themselves, they were treated without mercury, and would disappear, would come again, and again disappear. Still, not being satisfied with this, I said to Mr. Rose, "Now, sir, if a gentleman were to come under your care, what would you do—would you give him mercury or not?" Mr. Rose is not like some men, so wedded to his system as to have his mind fettered by prejudice, and he with much sense replied, that he should certainly give the patient mercury; and, gentlemen, I advise you to do the same. I will not say that those persons are dishonest who recommend contrary practice; but, if they had seen what I have, I am sure they would still place their reliance in the use of mercury. Some men are so prejudiced in favour of particular remedies, that the strongest possible facts which can be brought forward in opposition to their opinions, are not capable of producing the slightest alteration, or even a transient impression of their error. Now for a case in point: A gentleman went to a surgeon in the month of January, showed him a sore upon his penis, and asked him what it was; "Why, chancre," said the surgeon, "you must take sarsaparilla." He went to him again in February, telling him that it appeared again, and, on asking the surgeon what he was to do. the surgeon replied, "you must take sarsaparilla." He repeated his visit in March, stating that, although his sore had vanished for a time, yet it had again appeared in the same situation. "Well," said the surgeon, "you must take sarsaparilla." In June the patient repeated his visit, having, at the time, a venereal sore throat, together with a copper-coloured eruption on the skin, and he said to the doctor, "What am I to do now?" "Take sarsaparilla:" the use of which caused the disappearance of the secondary symptoms; but, in the following August, violent inflam-

mation made its appearance in both eyes, so that the gentleman was obliged to be kept in a dark room, to be bled, purged, and kept on the lowest possible diet; and, notwithstanding all these precautions, the virulence of the inflammation endangered the loss of his sight; at length the inflammation of the eyes having been subdued, in the ensuing September, a venereal eruption again made its appearance in the skin; there were also pains in the bones, and a sore throat. The gentleman again visited his doctor, and inquired once more what he must do to rid himself of his horrible complaints. "Why," says the doctor very gravely, "you must take sarsaparilla!" and, replied the gentleman, "I'll be d——d if I do (*excessive laughter*), but I will take advice," and shortly afterwards he consulted me. At the time I saw him, he had severe pains in the limbs and joints, venereal eruptions on the skin, and an ulcerated throat. He asked me what was his disease, and I at once told him, confirmed syphilis; he then detailed to me the history I have just mentioned to you. "Well, sir," said I, "adhere to the old Dutch motto, 'do right and never look back,' and give yourself no uneasiness about the past, as what has happened cannot be prevented." I prescribed for him ten grains of blue pill night and morning, and a quarter of a grain of opium to each pill. About ten or eleven weeks afterwards he called upon me, and his appearance had undergone so great a change, that I had entirely forgotten him; he soon, however, informed me who he was, and stated that he was completely restored to health. I mention this case to you, to show you both the folly and the danger of treating the secondary symptoms of syphilis with any other remedy than mercury; and also to point out to you the dangerous consequences of being prejudiced in favour of a remedy; which prejudice the repeated failure of the remedy could not surmount. Now, if you should unfortunately neglect to give mercury for the removal of primary syphilitic symptoms, let me exhort you never to be guilty of a similar neglect as regards the secondary; but, the moment they are presented to your notice, that instant commence exhibiting mercury, if the state of the patient will permit. All secondary symptoms, I am positive, may be prevented by a few grains of blue pill, judiciously given. In saying this, do not let me refuse that tribute which is due to the ability and candour of Mr. Rose, whose experiments were conducted in a very judicious manner, and their results faithfully and honestly communicated to the profession. If, then, under the most favourable circumstances, and under the most judicious management, secondary symptoms will appear, unless mercury be employed, it is right to withhold that remedy from those who are afflicted with the venereal disease? Recollect, gentlemen, who Mr. Rose's patients were; they were soldiers under orders,

at the command of their officers; and, whatever reasonable thing they were ordered to do, they were obliged to comply with. You cannot expect your patients to be so circumstanced, nor will you find them subordinate. Considering all the circumstances, I strenuously and conscientiously advise you to adopt that plan which I have so often felt it my duty to point out to you in the course of this lecture. I have only one more observation to make, which is, that syphilis should be cured by a slight, and not by a violent mercurial action; continue to give it for the periods I have already mentioned; but do not produce what is commonly termed salivation; it would rather prove injurious than beneficial.

[At the conclusion of this lecture there was loud and continued cheering.]

LECTURE LXVI.

SCROFULA.

GENTLEMEN, this appellation, at present used by surgeons, is a miserable title for the diseases which it is intended to represent; it is given to a class of diseases springing from debility. If asked what scrofula is, I should say that, in its character and origin, it is debility; that the disease, as it proceeds, becomes inflammatory; but that it is connected with original weakness, and derives a peculiar character on account of its arising from this source. You will find that scrofulous diseases are inflammatory, that they undergo all the different processes of inflammation, the adhesive and suppurative processes, ulceration and gangrene; but gangrene less frequently than any of the others. These four processes are thus the effect of scrofulous diseases, but you find them all imperfectly performed. The adhesive matter secreted in scrofulous affections, instead of being firm, consists of a curd-like matter, easily broken, and very soft; and this is owing to the blood-vessels not entering it. The suppuration is not of the common kind; it contains curd-like matter, and is not truly purulent; ulceration is slow in its progress; granulations are unequal and slow in forming. These processes are the effect of inflammation, but are also connected with debility; each is imperfectly performed. But how do scrofulous and common chronic inflammation differ? In common chronic inflammation there is debility, but it is the result of intemperance, or change of constitution; but, in scrofula, the weakness exists from birth; it is congenital or original debility.

The age at which scrofula manifests itself is during growth; it is extremely rare for it to occur after. But common chronic inflammation,

arising from a change of constitution, produced by intemperance, or any other cause, occurs after growth has stopped, and is much more easy of cure than scrofulous inflammation. Scrofulous disease depends on a state of constitution different to that which gives rise to common chronic inflammation. The one is general, the other is produced in after life. The character of a scrofulous child is as follows :—You will find the skin thin if you pinch it, which is quite different from the skin of children who are not scrofulous; in them the skin is solid and dense, and the fibres strong; but in scrofulous children the skin is thin, and the vessels may be seen meandering under it; and it is on this account that persons with this disease frequently have a rosy colour, arising from the thinness of the skin which allows the vessels to be seen under it. The hair is also light-coloured. If you observe in a family of five or six children, one among them who has a delicate thin skin, light hair, and complexion, you will find that if they are all exposed to the same causes, they will escape from any scrofulous affection, with the exception of the one stamped by nature, and that this, during its growth, will be affected by the disease. The hair is also extremely fine, the eye-lashes long, the pupils dilated, and the fingers are what is called clubbed, similar to the fingers in phthisical persons; the fingers are extremely long and thin, but at the extremities are broad and flat. The upper lip is of considerable thickness, and this is a mark of debility. Those who are the subjects of scrofulous diseases often have follicles on different parts of the body, incrustated with inspissated matter. In scrofulous persons the absorbent glands and joints are most frequently attacked; the absorbent glands, for a reason which I shall hereafter give; and the joints, from the exercise producing inflammation in the synovial membrane. You know that the absorbent glands of the neck and mesentery are more liable to scrofula than any others. Various other parts of the body are also liable to it, the lungs, the brain not unfrequently, the eyes now and then, the heart, I believe, never; I have never seen an instance where it was. The secreting glands are rarely affected by scrofula, at least the liver and kidneys, for the testicle and breast are exceptions. The testicle is now and then liable to a scrofulous affection, and we occasionally see a scrofulous tumour in the breast. The secreting glands, however, are very rarely subject to this complaint. Scrofula differs in different constitutions; it may be of an indolent or irritable kind, but more frequently of the first than the second. Of this circumstance you may not yet be aware, but in the course of practice you will find that an absorbent gland will enlarge, and continue so for weeks, and often for months, before it suppurates; and, on the contrary, that an enlarged gland will be in a most irritable state, and rapidly

proceed to a state of suppuration. This last is by far the worst disease of the two; for joint after joint, and various parts of the body become inflamed, whilst, in indolent habits, the complaint is sometimes confined to a particular class of parts, and the rest are excluded. This, however, is a variety.

Influence of Climate and Season on Scrofula.—You will find scrofula considerably influenced by climate, particularly those climates in which the change from cold to heat, and heat to moisture, are most frequent; and, on this account, our own island is favourable to the production of scrofulous disease. The vicissitudes of temperature are so frequent, that a man is never clothed so as to meet them, and the body is consequently exposed to these sudden and various changes. We find cold and moist climates giving rise to the difference of scrofulous affections, although it is found that those who live in countries where they are exposed to the extremes of heat or cold, are not the subjects of scrofula. But this disease is arrested by cold and heat, uncombined with a moist state of the atmosphere, although it previously existed; and persons predisposed to scrofula may prevent it from occurring, by a change to a warm and dry climate. But people from the East or West Indies, who come over to this country, not unfrequently fall a prey to scrofulous disease. Many children, born in the East and West Indies, are sent to this country to be educated, and therefore we have an opportunity of seeing the effect of climate on their constitutions; and I can assure you, that it frequently requires the greatest possible care to save them from the danger of scrofulous disease of the joints and absorbent glands; and very often, with all your care and attention, they will die of scrofulous disease. Those from the West Indies less frequently die of scrofula than persons from the East Indies; but I have seen some from the South Sea Islands, and most of them have died from scrofulous complaints.

From this statement, then, gentlemen, you see that children born in warm climates, and subsequently brought to this country to be educated, frequently perish. Although we have proof of some climates predisposing to this complaint, and favouring its production more than others, yet the most striking effects are manifested by the changes of the seasons, after scrofula has occurred. Thus, for instance, if a child with scrofulous disease be examined in the spring, and it has a gland that is inflamed, the complaint will go on during the spring till the summer months, when it will be arrested, and the health of the child improved. In this state it will remain till October and November, and then the child will become worse. By the alteration of scrofulous complaints, from the changes of the seasons, a surgeon often loses credit, though he

more frequently gains it. He will lose credit, if called to the child in winter, because then the state of the child's health will be in an improved state, compared to what it has been, which state, however, continues only for a short time, as it becomes worse with the return of spring: the surgeon will gain credit, if called to a child in the spring, because, being at that time very unwell, it continues so only till summer, when it rapidly recovers. In summer the symptoms disappear, in autumn they return, and continue till the winter, when they again become suspended. I remember being once called on to subscribe to a charity instituted for the cure of scrofula, and I said that I had no objection to subscribe, if its benefits were to be extended throughout the year; because, if its operations were to be extended all the year round, the eyes of the subscribers would be opened to the inefficacy of any charity of the kind. The way also to try the value of nostrums, blazoned forth as specifics for the cure of scrofula, is to watch their effects during the whole year, for else you may be deceived; they may occasionally afford benefit (which I do not mean to deny), but as to any specifics for the cure of the complaint, I need not tell you that such do not exist.

Well, such are the effects of climate and the changes of the seasons, on persons born with a debility of constitution, giving rise to inflammation of the scrofulous kind.

The next point to be considered is—*Whether Scrofula is hereditary?* —That scrofula is an hereditary disease, appears as clear to me as can be, and those who deny it, deny the evidence of their senses. When speaking of hereditary disease, I do not mean to say that children are born with an enlargement of an absorbent gland, or a disease of the joints; but what I state is, that a child will be born with an hereditary disposition to the complaint. Does a child resemble its father or mother? and do we not see parents predisposed to scrofulous disease, having children of constitutions, complexions, &c. as I have described to you, manifesting the signs of scrofulous affections at some period of their life? and this is the consequence of a particular state of constitution, transmitted to them by their parents. Let two scrofulous persons marry, and see the consequence; a great proportion of the children will be born with a scrofulous disposition; with that debility of constitution which gives rise to the production of the disease. I know that children may, with great care, be preserved from attacks of the disease. A man of a gouty habit shall have many children, and I would not say that all should be affected with gout; but will any one say that the children of such a parent are not more likely to be attacked with this complaint than the children of persons who never had the complaint? You may prevent scrofula by care, but that some children are originally predis-

posed to the disease there cannot be the least doubt; and in such cases the education and the habits of the youth should be so directed as to ward off a complaint the effects of which are so frequently fatal. A gentleman, whom I knew, and who was often the subject of gout, had three sons: the first child was attacked in early life with the gout; the second indulged in intemperate habits, and had the complaint to a severe degree; whilst the third, with extreme care and attention, escaped from it altogether.

The predisposing cause of scrofula is congenital, or consists in an original fault of constitution. The exciting causes are whatever tend to produce, or rather increase, that debility; such as the fever from diseases of a specific kind, as measles, scarlet fever, and small-pox. Scrofulous affections, occurring after small-pox, used to be much more frequent before the introduction of vaccination than since; and, if there were no other advantage attending it than this, it ought to be regarded as a boon to society. The reasons why small-pox disposes to the excitement of scrofulous inflammation, you must be acquainted with, without my entering into them at present.

With respect to the state of body in scrofulous children, the blood is less firm, the crassamentum loosely formed, and coagulating weakly; the quantity of serum abundant; and the solids are feebly formed. When you dissect a scrofulous person, you find extreme attenuation of the muscles, owing to the fibres being delicately formed, the cellular tissue thin, the heart weak, not at all having the appearance of the healthy organ; you find the arteries with loose coats, and, if you were to inject them, that the injection would scarcely reach the extremities; nor is this surprising, since it happens that the vessels often expand, and give way, and also that there is blood at the extremities of the arteries, owing to the great weakness of the vessels; that they had not the power of propelling it into the veins as they usually do. The stomach and intestinal canal are thin and pellucid; the absorbent glands are enlarged; the secretory glands are flaccid, but not diseased; and the nervous system sometimes exhibits marks of irritation having existed in it. This is, as far as we are able to detail, the nature of the disease. We shall now proceed to speak of its treatment.

Treatment of Scrofula.—The principles on which the treatment of scrofula should be founded are three: 1st. To make better blood; 2d. To strengthen the solids; 3d. To give vigorous action to the circulation.

To one or all of these principles, every mode of treatment should be referred. The action of the heart and arteries is naturally feeble, the

serum of the blood preponderates, whilst the fibrous portion is deficient in quantity; therefore, you must make better blood, strengthen the solids, or give a vigorous action to the system. The first object is to make better blood, and without this nothing else will be of avail. I cannot sufficiently deprecate the system of ordering vegetable food in scrofulous diseases, and proscribing animal food, which is most nutritious and easy of digestion. Vegetable food is more difficult of digestion than animal food, and many animals who live on it have more than one stomach to perform the different processes of digestion; some have only one, but then they are abundantly supplied with gastric juice, which is secreted in greater quantities than in men; and nature adds to the digestive powers by setting up another process in the intestines below, when animals have only one stomach. Vegetable food should not be given to children labouring under scrofula, as it leads to an aggravation of the complaint; but meat should be allowed, prepared so that the stimulus of the gastric juice, which is weak, may be able to act on it. The stomach should never be overloaded, or the powers of digestion will be impaired. Meat should be taken in small quantities and often, rather than in large quantities and less frequently; for, when the stomach is less loaded, digestion goes on much better. Therefore, I advise that they should breakfast between eight and nine, and take an egg or a little meat at this meal. They should have a sandwich about twelve or one o'clock, and meat with their dinner at three. It is right that they should drink with their dinner, although water is a bad beverage; some good beer, or a glass of wine, should be allowed. This will stimulate the secretion of the gastric juice, and digestion will be more completely performed than if no stimulus at all had been used. It is well known that in these complaints the stomach is not supplied with a sufficient quantity of juice to dissolve the food; therefore you must give some slight stimulus to excite the gastric juice. If you observe the animals around us, which live on animal and vegetable food, you find that after meals they lap some water, and rest. Rest appears to be conducive to the performance of the digestive process. An experiment has been made which confirms this opinion. Two pointers were fed, each with the same quantity of food; the one was immediately put out to hunt, and the other conducted to the kennel, and in two or three hours afterwards both were killed. The first had not digested the food he had taken, whilst the other had. Animal food should be given in larger quantities to persons with scrofulous disease than to those in a state of health, although the latter do not require the same aid to assist digestion. In scrofulous children I do not like the stomach to be loaded

with milk for breakfast, which considerably impairs the powers of digestion, and therefore I generally order a little meat or an egg as a substitute.

Next in importance to nourishment is exercise. Children with scrofulous affections, or even those predisposed to them should take a great deal of exercise in the open air; more, however, in the way of play than as a task; and here I must say, that I am anxious that those concerned in the education of youth, particularly female instructors, should be acquainted with what I have said on this important subject. I wish them to know what food and exercise should be allowed to children with a scrofulous taint, and how much the future happiness of those intrusted to their care is dependent on an attention to these particulars. At schools, in general, too little exercise is taken by the scholars. Boys, however, will have it; but not so with the girls; they are frequently compelled to sit from morning till night engaged in learning music, geography, French, Italian, and God knows what else, without paying the slightest attention to the preservation of their health, and thus impairing constitutions which might have been rendered strong and robust. It is not my wish to discourage the cultivation of the human mind in any degree, nor even to prevent the fairer sex from attaining those accomplishments which so frequently render them the grace, life, and ornament of society; but I think it the extreme of folly to compel children to pass hours over pursuits for which they have no taste, such as making them learn music when they have no ear; while their health is neglected, and their constitutions are ruined, by the confinement to which they are subjected. The mischiefs thus arising from the false system of education at present pursued in this country, so frequently come before my notice, that I wish what I have said to be generally known, in order that future misery may be prevented, and the physical education of our youth be better directed. Exercise should not be taken so as to fatigue the body; when children feel themselves weary, they should rest a little till they recover. When the state of the weather prevents them from taking exercise in the open air, they should play in a large airy chamber, and be allowed to dance in the evenings, taking care that the perspiration excited should not be checked by any improper means, as is too often done with thoughtless and giddy children; and, by this means, they will be brought up with constitutions invigorated, so as to ward off the attacks of a disease to which they were predisposed. I do not exaggerate when I say, that within this last year I have seen five hundred cases of scrofulous affections; never a day passes over my head without my seeing a case, and frequently three or four. This very day I have seen more; and, if asked how many were boys among

them, I should answer, not one. What is the reason of it? Why, boys will take exercise, and thus are less liable to the complaint; whilst girls are not allowed, and, if predisposed to it, are almost always attacked by it.

The third circumstance to be attended to is air; without good air all other means are of no use. Moist and cold weather is the worst. Those who live in marshy climates are subject to the worst form of scrofulous complaint. The state of the atmosphere you should choose is that in which the air is dry and warm; a very bleak wind is not desirable. The sea air is generally preferred; and when the children are near the sea-side, they should be allowed to play on the beach the greater part of the day. It is a mistake to suppose that the air of the coast in the wet and cold seasons is of any advantage to scrofulous children; it is only in warm and dry weather that any benefit will be obtained. Extreme cold suppresses the progress of scrofulous complaints; but, in moist weather, the symptoms return. Unfortunately, I have experienced in my own family the dreadful ravages of this complaint; although no one would say that I was a scrofulous subject (*a laugh*), I have lost five near relatives of the complaint from which I have been spared. Whilst at Brighton once, on a professional visit, I inquired if the number of scrofulous children were as great there as in other parts, and I found that it was. In the latter part of the spring and autumn, the sea coast is desirable, but in cold weather it is not. The bleakness of the air of the sea-shore is unfavourable to the constitutions of children tainted with scrofulous complaints. Air, exercise and nourishment are the three great points to be kept in view in the treatment of scrofulous affections. But what—you will say—nothing about medicine? Gentlemen, you may lay it down as an axiom, that there is no specific for the cure of scrofula; and he who says that there is, attempts to gull mankind by the assertion of what is not true. Medicines, occasionally given with a view to improve the digestive powers, and regulate the secretions, are good, but attention to the three points I have just mentioned, are of primary importance. I will mention to you what are the best; once a week, or every ten days, two grains of calomel and eight of rhubarb, in order to restore the secretions. This relieves scrofulous inflammation. on the same principle as all other inflammations are relieved. A good medicine to be given daily, for a short time, is the rhubarb and steel; two grains of rhubarb, and from three to five of the carbonate of iron. This is a very good tonic. Another good tonic consists of two grains of rhubarb, and from four to six grains of dried subcarbonate of soda, with ten grains of calumba, which may be taken mixed with sugar, a form that seldom disagrees with the patient. These means will greatly assist the powers

of digestion. One of the remedies which we use in the other hospital (Guy's) is infusion of camomile flowers, with a few grains of hydrargyrus cum creta, at bed time; or the oxymurias hydrargyri, in the proportion of a grain to two ounces of the tincture of bark; a tea-spoonful of which should be taken twice a-day in a glass of the camomile infusion. If the bowels are costive, tincture of rhubarb should be substituted for the tincture of bark. The liquor potassæ is a medicine also used. These different medicines medical men use in different ways; those I employ are the steel, with rhubarb and calomel, or the subcarbonate of soda with rhubarb and calumba. A great deal of care should be taken of children originally formed weakly; you should excite no feverish action on the one hand, nor do any thing to debilitate the constiution on the other. These are the Scylla and Charybdis which we must avoid; that of exciting fever on the one hand, and debility on the other: and recollect, above all, the three principles of treatment which I have so often laid down. Children should be well clothed, and never exposed to changes of temperature. For this purpose they should wear flannel close to the skin; and, in this case, it should be worn also during the night. If the weather be very warm, calico may be substituted for flannel. The great object is to preserve an equal temperature of the skin, and not to produce perspiration, because that would debilitate. It is right to recommend sea-bathing; the bath should be taken about three times a week, at eleven in the morning. The temperature of the bath should be at 94 deg.; the person should remain from sixteen to twenty minutes in it, and walk afterwards. Some children are exceedingly frightened at the sight of the water at the commencement, and in those cases it will be advantageous to sprinkle the body over first with tepid salt water. This will gradually remove the child's fear of the water, and prepare the way for the sea-bathing.

LECTURE LXVII.

Having given you, in the last lecture, a general description of scrofula, we shall now proceed to treat of the several parts attacked by this disease, and, first, of the absorbent glands most commonly affected.

SCROFULOUS AFFECTION OF THE GLANDS OF THE NECK.

Of the different absorbent glands, those of the neck are most frequently affected with scrofulous disease. Now, when you are consulted

in a case of this kind, the symptoms you find are as follow :—In the first place, you learn from the child's mother, that she at first observed a swelling in the neck, which was small, hard, not painful, nor in any way discoloured, but tender to the touch. Thus the inflammatory process does not go on to the rapid destruction of the part, for the swelling will frequently remain in this state of indolence during weeks, months, and sometimes years. Sometimes, however, owing to accidental circumstances, or changes in the weather, or the state of the child's constitution, the complaint proceeds with greater rapidity. If the complaint occurs in a person of an irritable habit, it will advance with rapidity; if, on the contrary, the person be of an indolent habit, it will be slow in its progress. When you examine, by dissection, the state of the parts affected with scrofulous disease, you find extravasated into the gland a great quantity of blood, and the blood-vessels enlarged. The interior of the gland is composed of rather a firm substance, which is of a yellowish-white colour. If you inject the subject first, you will see that the blood-vessels do not pass into the substance effused, in fact, that the adhesive matter is not organized. As the vessels do not shoot into this substance, it does not undergo the same changes as the adhesive matter thrown out in common chronic disease. In common chronic inflammation, the adhesive matter effused may be injected, which shows that it is in some degree organized. Remember, then, that during the adhesive stage, the inflammation may be increased from change of season, climate, or any peculiarity of constitution, and proceed to the suppurative. This disease produces little pus. These are the common symptoms of suppuration, but in a much milder degree than are usually met with. The suppurative process is weak and languid, and it is a long time before matter forms. The suppuration is very imperfect; the pus has not the true character of purulent secretion; it is composed of a curd-like matter, and resembles pus mixed with serum. These, then, are the appearances of the suppurative stage. Suppuration proceeds very slowly. The skin, at first, has a blush of inflammation on it; then becomes of a livid or purple hue. It frequently happens that, when the skin is in this state, a long time elapses before it gives way. When the skin, however, breaks, it generally separates to a considerable extent. The reason why scars in the neck are so large is, that the vitality of a large portion of the skin has been destroyed from the pressure of the pus; it then assumes a livid appearance, and, when it gives way, sloughs to a considerable extent. The ulcerative process proceeds slowly, compared with ulceration in other complaints. The interior of a suppurative gland very rarely sloughs; but the matter that is effused separates with

the pus. Such is the history of an enlarged absorbent gland, affected with scrofulous disease, the various changes which it undergoes, and the appearances which those changes present in their different stages.

Death is sometimes produced by the enlargement of the absorbent glands of the neck. I will relate to you three instances which more particularly strike my mind. In one case, the glands covered the jugular vein. I attended the case with a respectable practitioner in the city. The patient had frequent rigors, and a great deal of constitutional irritation; at the time I saw him his life was evidently in imminent danger, and in a few days after he died. We found, on dissection, that the absorbent glands were adhering to the jugular vein, and that the matter had escaped into it, which was the cause of the great constitutional irritation under which he laboured a short time previous to his death. The second way in which an enlargement of the glands of the neck may give rise to death, is by pressure on the veins producing apoplexy. I saw a case of this kind in a lad of sixteen or seventeen years of age. The glands were enlarged so as to press on the veins of the neck, and the boy died apoplectic.—The third case which I shall mention, is one where an enlarged gland suppurated into the larynx, and produced suffocation. It occurred in a boy who had received an injury of the head, which was followed by enlargement of the absorbent glands of the neck. They went into a suppurative state, and the pus discharged itself into the trachea, and produced death by suffocation. But it generally happens, that when these cases terminate fatally, there is also present considerable disease of the lungs and bronchial glands.

If I were asked why the absorbent glands of the neck are more frequently affected with scrofulous disease than the other glands, I should answer, that it was owing to their being so much exposed, and, consequently, so much influenced by the changes of weather and seasons. A child exposed to the cold, with the ears half frozen, the cheeks and head also cold, is suddenly brought into a place of excessive heat, which produces a slight degree of inflammation in the parts; that irritation also produces inflammation of the absorbents; and thus the reason why the glands of the neck are so frequently enlarged. Scrofulous enlargements of the glands of the neck is more frequent than those of the axilla; and enlargement of those in the axilla more common than of the glands of the groin; because the lower parts are better protected from atmospheric changes. But it sometimes happens that a peculiar secretion takes place in the gland, and that earthy matter is diffused in it. It is not at all an uncommon occurrence for a substance like chalk, and composed of carbonate of lime, to be deposited in an enlarged gland. Here is a specimen (exhibiting it to the class) of earthy matter that was

deposited in a gland; I removed it after death. These deposits are usually composed of carbonate of lime.

Treatment of enlarged Absorbent Glands of the Neck.—When a child, with a scrofulous enlargement of an absorbent gland of the neck, is brought to you for advice, you will treat it, if the complaint be of recent occurrence, like a case of common inflammation. You will give rhubarb and calomel internally, and recommend evaporating lotions as local applications. The best lotion you can use is the liquor plumbi superacetatis, with spirits of wine and water. In this way the inflammation will be gradually subdued. But these glands are apt sometimes, notwithstanding all the means you employ, and all the care that may be taken of the child, to go into the suppurative stage. In this case you must give the rhubarb and carbonate of soda twice a-day, together with a small quantity of the hydrargyrus cum cretâ (one grain) three or four times in the twenty-four hours. You must consider next what local treatment to employ if the gland suppurates. When you find that there is a disposition to suppurate, evaporating lotions will not succeed, and therefore must be discontinued. You should feel if there be any fluctuation: for the moment that there is the slightest blush on the part and sense of fluctuation, indicating the presence of pus, you should make a small opening with a lancet, as in a common abscess; you should not wait for the skin to assume a livid hue, for then you will never be able to prevent scars. A scar in the neck of a boy is not of much consequence, but in the neck of a female it is quite a different case. In boys the neck is covered by the dress; whereas, in females, it is generally exposed, and a scar in that part might be the means of destroying the happiness of the individual whose misfortune it was to have it. Nothing, gentlemen, is so revolting to the mind, or at least the minds of those who possess fine feelings and a refined taste, as the appearance of any thing on the female figure which calls to the recollection that the person you behold is tainted by a disease of a scrofulous nature; and therefore it is your duty, if you have any regard for your own reputation and the happiness of others, to prevent the occurrence of scars on the neck, a circumstance which may be easily effected. I will tell you why scars on the neck are so frequently met with: the surgeon waits, too often, till the skin has become livid, and then makes a puncture. But in this case he gains nothing by making an opening into the gland; in fact, if the skin be of a livid colour, I advise you then not to make an opening. Apply poultices, and let nature effect the opening; for the scar will not be so great then as if you were to make it. But I seriously advise you to make a puncture before the skin assumes the appearance I have just been describing to you. The instrument with which I open these

abscesses is a cataract knife, and I make the incision transversely, and just in the direction of the creases of the neck, so that when the wound heals, no scar is to be perceived. When the matter is discharged by the puncture, apply your finger to the side of the swelling, and squeeze out all the solid matter that may be contained in the gland. If the sac be not carefully emptied of all the solid matter, this substance will keep up considerable irritation, and prevent the healing of the wound; therefore I wish to press on your attention the necessity of attending to this point. I have frequently seen serious inconvenience occasioned by its being neglected. Remember, first, the time at which you are to make the puncture, and the direction in which it is to be made; and, secondly, do not omit, in all these cases, to squeeze out all the solid matter that may be within the gland. If the wound be indolent afterwards, you had better inject into it a solution of sulphate of zinc, containing about a scruple of the zinc to a pint of water. Throw a small quantity of this into the wound; it will soon produce healthy granulations, and lessen the discharge if it be copious. Such, then, gentlemen, is the treatment to be adopted after the gland has proceeded to the suppurative state. What I advise you to do is, to make an opening into the gland as soon as fluctuation can be detected, and before any discoloration of the skin takes place, in order to prevent a scar hereafter. Thus, you see, by a little attention, the cause of much unhappiness may be kept off. At this time you should give rhubarb and carbonate of iron, about two grains of the former, and five of the latter, twice a-day. The diet should be nutritious, but not in the slightest degree stimulating. With respect to the ulcerative process, there is nothing particular to remark: fomentations, poultices, and the ordinary means, must be had recourse to. Your object, however, should be to prevent ulceration by the mode of treatment I have laid down; and it is only when it cannot be prevented that the latter means are to be employed.

AFFECTION OF THE MESENTERIC GLANDS.

The glands which are affected with scrofulous disease, next in frequency to those of the neck, are the mesenteric glands. In young persons they are most commonly affected at the age of six or eight months. This complaint is known by the belly being tumid, and from the tenderness on pressure; attenuation of the skin, voraciousness of appetite; the limbs of the child, at the same time, wasting. The intestines are equally irregular, being sometimes purged, at others costive. In the motions are occasionally observed earthy matter (a specimen of which I now send you round), composed of carbonate of lime. The causes which produce enlargement of the mesenteric glands arise from disease

of the secreting glands of the intestinal canal; such as irritating food, which irritates the mouth of the absorbent vessels of the intestines leading to the mesentery. With respect to the effect of mesenteric diseases, they consist, at first, in an interruption of the process of absorption. The chyle travels through the absorbents to the mesenteric glands, and, when some of these are enlarged, the chyle is interrupted in its course. Although the child generally eats voraciously, is it wonderful that there should be such emaciation, independent of the irritation produced by the system being deprived of nourishment?

Treatment of Diseased Mesenteric Glands.—As to the treatment, I advise you to direct that the child should take animal food, prepared so that it may be easily digested. Vegetable food is very improper. A little arrow-root may be taken, and nutritious broths. Animal food will generally best agree with the child, if it be prepared in the manner by which it may be most easily digested. The principle on which you act is, that the child may take the most nutritious food, and why? Because, absorption being to a great degree prevented, it is important that nothing but highly nutritious food should be taken, so that nutriment may be conveyed to the system. Animal food is more nutritious than vegetable food; therefore you give it in preference to the last. To assist the digestive process, it is desirable to give some wine and water, to stimulate the stomach, to secrete the gastric juice, and to excite the action of the intestines. In exciting the intestines, you have a two-fold object in view: stimulating the absorbents, and producing the peristaltic motion of the intestines. The best medicine in this disease, with which I am acquainted, is the oxymuriate of mercury, given in small doses, and in combination with the tincture of bark; one grain of the oxymuriate, in two ounces of tincture of bark; or, should the bowels be costive, in the same quantity of tincture of rhubarb. The hydrargyrus cum cretâ and rhubarb, given so as to produce an aperient effect, are good medicines. The oxymuriate of mercury should be given with no other view than to improve the secretion from the liver and intestines, and thus produce one stool a-day. The abdomen should be covered with a stimulating plaster, or frequently rubbed with the hand, in order to produce a gentle action in the part, and excite the absorbents. This is the treatment of enlarged mesenteric glands.

Dropsy is sometimes connected with this disease. Then paracentesis should be performed, when the patient generally recovers. Now and then a mesenteric gland suppurates, opens at the navel, and frequently communicates with the intestines, and thus an artificial anus is produced. In these cases, where there is an artificial anus, a large proportion recovers. Poultices should be applied over the opening; and

when the inflammation is subdued, strips of adhesive plaster should be applied, so as to bring the edges of the wound together, but not until you think that all the matter has been discharged from the gland.

DISEASES OF JOINTS.

The diseases of joints vary in their character, according to the stage of the complaint. It generally happens, that after a child of a strumous habit has walked a considerable distance, that it complains of pains in the joints, which is accompanied with stiffness of the joint, and inability to move it. The patient takes alarm; and I may say that this disease can never be too early attended to. The complaint may generally be removed if it be attacked early: but, if six weeks or two months elapse before the person applies, he will never recover. A great deal, therefore, depends in this complaint, on early treatment. To prevent mischief is infinitely better than to effect a cure, and in these complaints a cure is not so easily effected. There is little tenderness at first, and the swelling is very slight. If the synovial membrane be inflamed, there will be a gritting between the bones under the patella on each side, and so in different parts, according to the joints affected. The joint will remain in this state for some time, possess the same appearance as in health, and the constitution suffer little. But where it has existed a long time, the suppurative process will at last be set up, and the joints will assume the character common to inflammation of all joints. When the suppurative process commences, a great quantity of pus is secreted, if there be much constitutional irritation. Indeed, there may be at first a copious secretion and slight constitutional derangement; for the suppurative process is not attended with the same constitutional effects as in other parts of the body. When the abscess breaks (which is a long time from the commencement of the disease), the ulceration is often at a little distance from the joint, and there are generally sinuses extending from the point of ulceration, for two or three inches up to the joint; and thus, in scrofulous enlargements of the knee, the abscess generally breaks above or below the patella. We generally let these abscesses open by themselves, as there is little constitutional irritation at first, and the opening cannot be delayed too long. The abscesses generally open in more parts than one, and the suppurative process takes place at a distance from the joint; the ulcerative process is slow, and excites little constitutional irritation. When you dissect a joint affected with scrofulous disease, you find, after having cut through the integuments, that there is a great deal of adeps between the ligaments and interstices of the skin. Next you will see the capsular ligament thickened, and that the thickening has taken place on

its interior surface. The synovial membrane will be also found highly vascular. You now examine the cartilages, when you will find that they have undergone more or less ulceration, and are covered by processes of adhesive matter; and, lastly, the bones themselves will now and then be in a state of ulceration: sometimes there are earthy deposits on them; but they are more frequently lessened in size. With respect to the nature of the complaint, I believe that it is the result of exercise, which has produced inflammation of the internal linings of the joints, and frequently of the synovial membrane. The action of the joint leads to the inflammation; for you find that a child, after walking, taken, as it frequently is, to a distance from its place of residence, and the parent forgetting that it has to make two or three steps to her one, and its attention being kept up by the prospect of amusement, I say, that, in these cases, you will find the child on the following day complaining of pain in the joints. A medical man is consulted, who finds swelling and signs of inflammation of the joint; inflammation of the synovial membrane comes on, which leads to the absorption of the cartilages, and sometimes bone: for my own part, I believe it is the internal lining of joints which is originally affected.

Mr. Brodie (whom I am proud to call my friend) has written a work on diseases of the joints, which cannot be too carefully perused by those who wish to become acquainted with these affections; and he is more disposed than I am to think that the disease commences in the cartilages. I am of opinion that the synovial membrane is at first attacked, and then that the complaint gradually extends to the other parts. It, however, matters little, for the same treatment is to be pursued whether the disease originates in the cartilage or the internal lining of the joint.

Treatment of Scrofulous Affections of the Joints.—The treatment required in these complaints is as follows:—The great object is to preserve the limb in a state of rest; this is so obviously necessary for an inflamed part, that every man will see the reasons for attending to it. If I had inflammation of the hand, should I expect that inflammation would cease unless I kept my limb quiet, and in a state of rest? And is it not equally absurd to imagine that an inflammation of the joint will be subdued unless that joint be kept in a state of perfect rest? I will not say that the body should always be kept at rest, but only the limb affected. This may be often secured, so that it shall remain quiet, although the body is in exercise. Next in importance to rest is the reducing the heat of the part. Evaporating lotions of water and spirits of wine, or the liquor plumbi superacetatis dilutus, with spirits of wine and water, should be employed. Rhubarb, and the submuriate

of mercury ought to be given once a-day, or every second day. Suppose, however, that the disease advances, and is not subdued, it will be necessary to employ some local counter-irritant. Blisters, tartar emetic ointment, vinegar poultices, issues and setons, are the various means used for this purpose. If the joint suppurates, it will be best not to apply issues or setons close to the joint. Mr. Cline tried once to investigate this point, and the result of his observation was, that if setons and blisters were employed, they should be employed at some little distance from the joint. Blisters may be employed over the joint, but they should not be so large as to produce considerable irritation: they should be kept open by the unguentum sabinæ. Depend on it this is the best treatment; the tartar emetic ointment is a useful irritant, in the proportion of a drachm of the tartarized antimony to an ounce of spermaceti ointment. When the irritation has, by evaporating lotions, and other means, been lessened, no motion being at all employed, it will be necessary to put a splint, under the limb, extending from the ham to the heel, and then to use friction, so that the joint may in time be restored to use. If no friction or passive motion be employed, there will be no chance of restoring the limb. This was the advantage of the late Mr. Grosvenor's plan, of Oxford. I will not say that friction, when the inflammation is going on, is not injudicious; but I mean that when the inflammation is subdued you are not to leave the joint in a state of rest, but to use friction. Let me put you on your guard with respect to cases of common inflammation; in them you may employ motion earlier than in scrofulous disease. There is such a disposition to a return of these last affections, that you should never give any pain in the motion you use; the exercise should be so employed as not to excite the least uneasiness in taking it.

The next circumstance to be considered is, when does amputation become necessary? Formerly, limbs used to be amputated for scrofulous affections much more frequently than at the present day. The reason we seldom amputate is, that the affected limb may, with care and management, be often made more useful than an artificial one. In enlargements of the knee and ankle, it may be necessary now and then to amputate; but it ought never to be done unless the patient is labouring under great constitutional irritation, which threatens destruction to his life, or the limb has undergone such changes that it is not likely to be useful hereafter. For instance, in cases of scrofulous affections of the ankle joint, the foot often remains extended, and the patient is only able to walk on his toes. Here an artificial foot would be much better than the natural one. In scrofulous diseases of the knee-joint, the tibia is often dislocated forwards. You saw a case lately over the way, of

this description; the deformity will always remain, and the limb be of little use. Amputation of the fingers and wrist is occasionally performed; that of the arm very rarely.

LECTURE LXVIII.

I SHALL now proceed to speak of diseases of the hip joint, psoas and lumbar abscess, and vertebral diseases.

DISEASES OF THE HIP JOINT.

Diseases of the hip joint are more liable to be mistaken than scrofulous diseases of any other part of the body; much error prevails with respect to them. The first circumstance which indicates disease of the hip joint, is some degree of lameness, and pain in the knee. The motions of the joint are impeded; extension is performed with difficulty: The child's knee is bent, and the heel on the diseased side scarcely rests upon the ground. Besides this incapacity for extension, great difficulty is experienced in the flexion of the joint. Thus, if you attempt to bend the knee towards the abdomen, the child shrinks from the touch, and complains of pain. If you throw something on the floor, and desire the child to pick it up, you will observe that, in attempting to get possession of it, it bends only the sound knee. If you say, "Let me see you put your foot on the chair;" the child does this readily enough with the sound leg, but is incapable of doing it with the other, in consequence of the confined state of the flexion of the joint. The rotation of the joint is also impeded: more especially the rotation inwards, which cannot be attempted without great pain and uneasiness. There is apparently a difference in the length of the limb; the unsound limb at first appears longer than the other. It is possible that an effusion into the head of the joint may push down the limb a little, but I doubt whether this has any influence in producing an elongated appearance of the limb. The length of the limb is not really increased, but an appearance of elongation is produced by the parietes being depressed on the diseased side; if you draw a line from the spinous process of the ilium from one side to the other, you will find the difference of an inch. After a short time, indeed, a considerable reduction takes place in the length of the limb, the reason for which you will immediately see.

When you endeavour to ascertain whether disease of the hip joint exists or not, you should first place the patient on his back, and examine whether the sides of the pelvis are equal; the pelvis will be lower

on the diseased side. Having placed the patient in the recumbent posture, you will then bend the knee towards the abdomen, which, if there be disease of the hip joint, will occasion considerable pain. In rotating the joint also, much pain will be excited in consequence of its stiffened state. You will then turn the patient on his face, and observe whether the nates are lower on one side than on the other: there is generally a difference of an inch or more on the diseased side. These are the common characters of this disease. On dissection you find the following circumstances:—In the first place, a quantity of adhesive matter is poured out about the joint; the ligaments are much thickened; the synovial surface is inflamed, and often slightly ulcerated; the cartilages of the joint are ulcerated; and, lastly, the bone itself is sometimes absorbed—not only the head of the bone which enters the acetabulum, but the acetabulum itself. You will find examples of all these appearances in the preparations on the table; there is one in which the head of the bone has been absorbed from ulceration, and another in which the cavity of the acetabulum has undergone a remarkable alteration, the upper part of it having been absorbed. Abscesses are frequently formed in diseases of the hip joint, which take different directions; in general, their course is down the thigh, between the trochanters and the outer surface of the thigh, where they break. Sometimes they occur in the upper part of the thigh; there is an example in the collection, in which an abscess occurred in the direction of the femoral artery; and, by its pressure, occasioned the absorption of a considerable portion of the vessel itself. Sometimes the abscess breaks into the rectum; there is an example of this in a preparation on the table, where you will perceive the rectum very considerably enlarged at the place into which the abscess has broken. Abscesses sometimes take their course into the vagina, from whence the matter is discharged; an instance of this kind occurred recently in a child of eleven years of age. It will be right, therefore, to mention to the friends of the patient, that there is great variety as to the course which abscesses take in this disease.

The cause of this disease is, in general, too much exertion; too long a walk, for instance, for the strength of the patient, which produces inflammation of the synovial surface.

Treatment of Diseases of the Hip Joint.—With respect to the treatment of this disease, you will observe, during the inflammatory stages, the same plan which I have recommended to you in the treatment of scrofulous complaints. It may be observed, generally, that if you do not cure a case of diseased hip joint in a few weeks, from six to ten weeks, for instance, you will not succeed at all. In the first place, the recumbent posture, and as much rest as possible, should be strictly

enjoined. If there is much pain, leeches should be applied; evaporating lotions should also be employed in the first few days. If you do not find the inflammation yield in a few days, it will be right to put a large blister over the part, and to keep it open with the unguentum sabinæ for a considerable length of time. The surface kept open with the savine ointment should not exceed the size of a crown piece, as you might otherwise produce too much irritation, and do more harm than good. Issues and setons are more applied here than in other diseases of the joints. It is better to regulate the degree of irritation in this way, than to endeavour to produce effects by violent means, which, by exciting fever, might only be adding fuel to the flame. With respect to the treatment of abscesses, it is right in all diseases of joints, and especially in diseases of the hip joint, to postpone the opening of them as long as you can; unless the abscess is exceedingly large, it is best not to open it at all. The reason of this is, that if you open the abscess early, you expose the cavity of the joint to irritation; whereas, if you delay the opening of it, you suffer the abscess to make its passage to a considerable distance from the joint, so that the opening of it will not be liable to excite much irritation in the cavity of the joint. The irritation will be very slight if you delay the opening, but, if you make it early, the effect will be just the same as if you were to make an incision into the joint. Give time for nature to perform her task, and to fill the joint itself with adhesive matter, as the abscess extends down the limb to a great distance from the joint. I have made up my mind most decidedly on this point, having again and again had an opportunity of contrasting both modes of practice. When the disease is protracted, it would be cruel and injurious to the child to keep it in a state of perfect rest, and it should therefore be allowed to use a crutch. This will prevent the derangement of the general health, and the depression of mind which arises from long confinement. If the disease has continued for any length of time, it is not to be expected but that some lameness will remain.

OF VERTEBRAL DISEASES.

A disease, similar to the disease in the joints occasionally occurs in the spine, sometimes beginning in the vertebral substance, sometimes in the bone itself. The disease of the vertebral substance has been accurately described by Mr. Pott, and I recommend you to consult his pamphlet, which contains a very admirable history of this disease. It is manifested in the following manner:—The child complains of a fixed pain in the spine; the pain, however, is not confined to the spine, but it extends down on each side, in the direction of the nerves, arising from the spinal marrow. There are weakness and pain in the back;

pain on the sides, more on one side than on the other; and the nerves arising from the spinal marrow are inflamed in consequence of the pressure on the membrane of the spinal marrow. After a little time, there is a projection of the spine backwards, one, two, or three, of the spinous processes projecting more than the others. It usually happens, that the lower extremities become affected; sensibility is diminished, and the muscles lose a portion of their voluntary power. Thus, a child affected with this disease, is in the constant habit of falling, in consequence of a want of due power in the muscles. There is this difference between paralysis and the effect on the lower extremities from this disease, that, in the former case, all action of the muscles is suspended; in the latter, there is diminished power and spasmodic contraction of the muscles. The patient sits with his legs drawn under him, and his heels towards the nates; and there are, besides, spasmodic twitchings of the limbs. If the lumbar or dorsal vertebræ, be affected, there will be difficulty in discharging the urine, and the fæces will at length pass off involuntarily. When the disease is in the neck, the head is the only part of the body, except the vital organs, which retains its power; volition is lost in all the parts of the body below the seat of the disease, and the patient is reduced to the most abject state of helplessness. The disease of the spine is very apt to produce abscesses, in the form of psoas and lumbar abscesses. These abscesses frequently occasion a very considerable loss of substance, as you will have an opportunity of observing in the preparations which I shall send round. On dissection, the vertebræ are found to be sometimes wholly, and sometimes in part, absorbed; occasionally, four, five, or more vertebræ are absorbed; there is a specimen in the college, in which four vertebræ are wholly, and two are partially, absorbed. This absorption is the effect of pressure on the spinal canal. A curious change takes place, after a time, in the spinal canal, which is, that, instead of being smaller, it is larger opposite the part in which the vertebræ have given way.

In cases where a cure has been effected, the spinal canal is larger opposite the part where the vertebræ have been absorbed, than it is above or below the diseased part. The mode in which the disease becomes cured, is by the upper portions of the vertebræ falling on the lower, and in this way anchylosing. This is not matter of conjecture; there are three specimens on the table, in which you will see the upper part of the spine bent forwards, so as to meet the lower vertebræ, and in this way producing anchylosis. This must be your object in the treatment of this disease. You should keep the spine of the child as much as possible at rest; with this view the child should be kept as steadily as possible in the recumbent posture, so that the vertebræ may

be suffered to fall into contact, and by coalescing effect anchylosis. If you attempt to keep the spine straight, you will defeat the object of nature; do not keep the patient in a directly straight line, but rather assist nature in producing the union of the vertebræ. Great attention should be paid to the general health of the child; it should have the best of nourishment, taking care to avoid any thing which may produce feverish excitement; likewise airings in a carriage, care being taken that the body should not be shaken. If the child cannot be kept at rest; if the parents are unable, or refuse to observe these instructions, the next best treatment will be to apply one of Callow's backs, which is worn upon the spine, and fixed round the pelvis and shoulders. As to avoiding deformity, that is out of the question; in all these cases, deformity is inevitable; whatever you do, this cannot be prevented. The words which now fall from my lips you may recollect at some future period, when you may be called to a case of this kind; and I now tell you that I have never met with an example in which the spine, under these circumstances, has been exactly restored to its natural state. All that you can do is to assist or rather not to oppose, the process of nature, in producing anchylosis. Blisters, setons and issues, are commonly employed, but they frequently do more harm than good, by the irritation which they excite in the constitution; the means on which you should chiefly rely, are rest, and the recumbent posture. The part of the spine affected is of no importance with respect to the cure; whether it be the neck, back, or loins, there will be no difference as to the treatment, except in the form of the mechanical means which may be employed. The next diseases to which I shall call your attention are

PSOAS AND LUMBAR ABSCESSES.

With respect to these diseases, I shall point out to you the nature of their treatment very shortly. Disease of the ligaments of the spine commences between the ligaments and the surface of the intervertebral substance. It is very often nothing more than an abscess, from the disease which I have just spoken of, having its origin in inflammation of the spine, and the intervertebral substance. The matter spreads till it reaches the origin of the psoas muscle, which passes into ulceration, and forms a bag, surrounded by a complete ring. The abscess proceeds as far as the tendon of the muscle, by Poupart's ligament, and its further progress is restrained by the tendon; when it passes under Poupart's ligament, between the femoral vein and the symphysis pubis, it has generally attained considerable magnitude, and has the appearance of femoral hernia. You may know this abscess, by the following marks: in the first place, when you ask the patient whether he has for

a long time had continued pains in the loins; if he has psoas abscess, he will reply, "Yes, four, five, or six months;" you will find that he has a difficulty in extending the thigh; if he puts his legs together, he feels pain and tightness in the groin, and he has increased pain in attempting to exert the limb, in consequence of the psoas muscle being then on the stretch. An excellent case of psoas abscess, in which the symptoms were particularly well marked, occurred in the other hospital a few days ago. This disease has the same seat as femoral hernia, and is, therefore, liable to be confounded with it; the marks which chiefly distinguish it from femoral hernia, are the pain in the loins, and the very great constitutional disturbance which the patient suffers in the progress of the disease. If the abscess forms on the side of the vertebræ, instead of the fore part, it is termed lumbar abscess, instead of psoas. So much for the nature of psoas and lumbar abscess; with respect to the treatment, you must allow the abscess to take its course; very little can be done in this disease, until it has acquired considerable magnitude. The use of issues is sometimes recommended in these cases. Little can be done, however, to prevent its progress when it is once formed, and I do not know that any advantage is to be derived from counter-irritation. *Digitalis* has been given, with a view of promoting absorption, but I have not known it in any instance succeed. Mr. Cline, senior, once gave it to a very considerable extent, to a boy fourteen or fifteen years old; the abscess diminished for a little time, but when the digitalis was given up, in consequence of its influence on the general health, the disease returned. Let the abscess proceed until you observe a redness or blush of the skin, and then adopt Mr. Abernethy's plan of making a valvular opening into the part, so as to discharge the matter, and close the wound almost immediately. The danger does not arise from the quantity of matter accumulated, but from the irritation produced by the attempts of nature to close the abscess, and fill the cavity by the process of adhesion. Four days after the abscess is opened, violent symptoms of constitutional irritation are apt to come on, such as great depression of strength, loss of appetite, and the patient is soon reduced to the lowest extremity. It is extremely desirable to prevent the occurrence of these symptoms; and the plan of Mr. Abernethy is the best that has ever been suggested by any surgeon, with a view of preventing them. You are to make the opening obliquely, apply a bandage, which is fastened round the abdomen, and endeavour to bring the sides of the abscess as close together as possible, in order to promote the process of adhesion. If ulceration should take place, the matter will be in this way discharged, and all you can do is to support the efforts of nature. I have frequently seen patients recover from this disease. I advise you to use

all the means which I recommended in the first lecture on Scrofula, for the purpose of improving the general health of the patient. A considerable degree of rest should be enjoined; all exercise is injurious in this disease. Blisters are sometimes placed on the spine, and issues opposite the seat of the disease, but I am not sure that external irritation is of any considerable advantage. I have, however, seen benefit from injecting the abscess; the injection usually employed is the sulphate of zinc, or alumen. It promotes the adhesive process in the interior of the abscess, glues its sides together, and lessens the purulent secretion.

RACHITIS.

I shall conclude this lecture with a few observations on the disease produced by debility of the vascular system, which is commonly called rickets. It first manifests itself in disease of the mesenteric glands; the abdomen is increased in size, the head is considerably enlarged, and out of proportion to the rest of the body, so that the disease is often mistaken for hydrocephalus. This arises from the softened state of the bones, which are incapable of supporting the action of the arteries of the brain, and the head and forehead are consequently expanded. The chin is expanded, the sides of the jaws are brought together, and the whole of the features are altered, so that, in general, by merely looking at the face of the patient, you may infer from it the state of the spine, and other parts of the body. An alteration takes place in the form of the spine, which has a double curvature, above and below, like the italic *S*. Nature endeavours still to preserve the perpendicular line of the body, by producing a second curvature as soon as one begins, and the equilibrium is maintained, though there is a considerable variation in the form of the spine. The scapula is also considerably projected. A parent will come to you and say, "I am very uneasy about my child's shoulder, it is growing out." You will judge from this alteration in the shoulder, that there is some alteration in the form of the spine and ribs. Pressure on the shoulder, therefore, with a view of remedying this defect, is a most absurd and unscientific practice; it may give pain, but can do no possible good. The spine, in these cases, has given way in two directions, and the ribs on one side are more curved than on the other. This incurvation of the ribs occasions the alteration in the form of the scapula. The anterior part of the chest is extremely projected; the sternum is sometimes sunk between the cartilages of the ribs, and sometimes advances so as to form what is called a chicken breast. The os humeri, the radius and ulna, the femur, and the tibia, all undergo an additional curvature. Absorption of some of the bones at length takes place, and nothing but the cartilage remains. When you

feel the os humeri of a child under this disease, it seems as if it had had a fall, and the bone had been fractured; the ossific matter is absorbed, and nothing but cartilage remains. The same appearance is frequently observed in the femur and knee-joints of children in the low alleys of this town, who are deprived of healthy or proper nourishment, and get scarcely any thing, perhaps, but a little gin, which their mothers give them by way of comfort, though they give them nothing to eat. These are the miserable changes to which rickety patients are subject. The cause of all this is a great deficiency in the powers of the circulation, in consequence of which the bones lose their phosphate of lime, and become spongy at the extremities, and the joints, therefore, are exceedingly enlarged. The ossific matter binds down the cartilages, so as to prevent their expansion, hence arises a diminution of the ossific deposit, which leads to the alteration in the form of the bones. With respect to the treatment of these cases, you will observe the same general principles which I laid down in the first lecture on scrofula, and you will also resort to mechanical means. For the enlargement of the head it will be right to use some sort of pressure; a cap or a roller round the head may be worn, for the purpose of preventing the growth of the head, by the pressure of the arteries of the brain. The next point is to prevent the curvature of the spine, and for that purpose, it has been the practice to keep children in the recumbent posture for a great length of time. This is a plan which I by no means advise; exercise is absolutely necessary to the health of children, and I am glad to find that a respectable gentleman at the west end of the town, and a gentleman at Bath, have adopted more rational principles in the treatment of this disease. The cause of this disease is debility, and deficiency in the circulation: how is it possible then to give vigour to the circulation, if the child is kept in a confined atmosphere, and prevented from taking exercise, and participating in those amusements which are so essential to health? Exercise should be freely allowed, taking care only that it be not protracted so as to occasion fatigue. How, it may be asked, can you allow exercise, and at the same time bring the spine into a straight position? By giving artificial support to the spine. This may be effected by two springs of steel added to stays, one on each side of the spine, which may be worn by the patient in any position. Callow's back is a good mechanical contrivance; it fits to the back of the patient, and is passed round the pelvis without pressing on the sides—the pressure is on the crista of the ilium, and not on the sides. In the use of mechanical means, the great object should be, not to force the child into a constrained position, but merely to prevent inclination on one side or the other. I have known

children laid down for a length of time, to the great injury of their general health, without producing any effect on the distortion. A lady, of great talent and great resolution, lay for twelve months in the recumbent posture, and rose with her spine in the same state, but with an additional disease in the bladder. The urine was loaded with an immense quantity of mucus, her natural delicacy having restrained her from making water as often as she had occasion. This was followed by a disease of the womb, which proved fatal. I have read a book lately with great pleasure, or, rather, I have looked through it, for I cannot say that I very often read a book, in which the author recommends a particular mode of exercise, with a view of bringing certain muscles of the body into action, so as to oppose resistance where there is any deviation from the natural form. The plan is founded on sound and rational principles, and is well calculated to have the effect of opening the chest, keeping the shoulders well back, and bringing the spine into its natural position. In rickety affections of the knees, horse exercise is of great advantage; if the patient is very young, he may be allowed to ride the rocking-horse as long as he likes. The position on horseback throws the knees outwards, while the exercise is beneficial to the general health of the patient.

I shall detain you, gentlemen, a few moments longer on my own affairs, and those of my colleagues. Their feelings have been hurt by the observations which I made on the abuse of mercury, in the treatment of patients for gonorrhœa in these hospitals. Those observations having been made for many years in these lectures, are not applicable to them. Who are the men, gentlemen, against whom it has been supposed that these observations were directed? Are they men whom I could possibly feel disposed to injure? Mr. Travers was my apprentice, Mr. Green is my godson, Mr. Tyrrell is my nephew, Mr. Key is my nephew, Mr. Morgan was my apprentice. I feel proud in having such men around me, and I believe at no former period has the surgical department of these hospitals been so well filled as it is by them. I do not wish to be understood as disparaging the abilities of former surgeons, but what I do say is, that there have never, at any one time, been so many persons officiating as surgeons to these hospitals who have been so properly educated to the profession. It is my wish to uphold the profession, and it is because I wish to uphold it that I wish its abuses to be corrected. I believe much good has already resulted from my observations on the abuse of mercury. It is not my intention to retract my opinions; and I am happy in being able to state that the present surgeons of St. Thomas's and Guy's have never pursued the system of treatment which I deprecated in the lecture on gonorrhœa, and that the

venereal wards of Guy's are about to be opened within a week *under new and improved regulations!* I have spoken to the gentleman who rules over that hospital, and I have the satisfaction of stating, that making patients spit three half-pints a day will no longer be a part of the system, but that the venereal wards will be within a week opened *under new and improved auspices.* I trust that harmony and unanimity will ever be preserved among the members of the profession, which are essential for their mutual advantage, and the advantage of the public; and it shall not be my fault if that harmony is ever disturbed.

LECTURE LXIX.

ON DISLOCATIONS.

GENTLEMEN, before considering the particular dislocations, I shall make some general remarks on these accidents.

A dislocation is the removal of the articulating portion of a bone from that surface to which it is naturally connected. A limb, when dislocated, is generally rendered shorter than before; but there are two dislocations in which the limb is lengthened, as in the dislocation of the femur into the foramen ovale, and the dislocation of the humerus into the axilla. The axis of the limb is altered, and it becomes unnaturally fixed. In the first moments, however, of the dislocation, considerable motion remains, and the position is not so determinately fixed as it afterwards becomes. The motion of the joint is lost, flexion and extension are slightly allowed, but rotation is completely prevented. There is a dull confused sensation in the part; but if the head of the humerous be thrown into the axilla, the pain is very severe, and sensation is lost in the fingers, from the pressure on the axillary plexus. If the head of the femur be thrown into the ischiatic notch, the pressure of the bone on the nerves there occasions great pain and numbness of the lower extremity. There is a slight crepitation when dislocations have only occurred for a day or two, which is owing to the escape of synovia from the joint into the surrounding cellular membrane; this becomes thickened by the absorption of the more fluid part, and crackles under motion; a circumstance which every practitioner should be aware of, as this is often mistaken for fracture; but it does not give that peculiar grating feel which the extremities of the fractured bones produce. There is very great swelling produced by the extravasation of blood into the cellular tissue, but the tension arises secondly from inflammation. In the early days of the accident these

circumstances render it difficult to decide on the absolute nature of the injury; and the difficulty is increased exactly in proportion to the time that has been allowed to elapse after the accident. When, therefore, the swelling has subsided, the muscles are wasted, and the motions of the limb impeded in a particular direction, and the head of the bone can be distinctly felt: it would be both illiberal and unjust to throw out any insinuations tending to the prejudice of an individual who might have given a different opinion under circumstances so much more unfavourable for forming a correct conclusion. The blood-vessels sometimes sustain great injury in dislocation. In a case, where the dislocation of the clavicle, at its sternal end, occurred backwards, the subclavian artery was so much injured that the pulsation at the wrist was stopped, and the circulation carried on by the anastomosing vessels. In another case also, the brachial artery suffered so much that it was necessary to tie the subclavian. On dissection of those who die from dislocations arising from violence, it is found that the capsular ligament is torn transversely to a great extent, and the peculiar ligaments of the joint are ruptured. In dislocation of the hip, the ligamentum teres, I believe, is always ruptured; frequently a piece of the cartilage is separated with it, and sometimes even portions of the bone. In dislocations of the os humeri, the tendon of the biceps remains uninjured, in the cases which I have hitherto seen; but the muscles and tendons connected to the joint are very much injured, especially the subscapularis.

Whenever the thigh-bone is dislocated into the foramen ovale, the fibres of the pectinalis are torn, and those of the adductor are very much injured. There is generally great extravasation, and sometimes matter forms in four or five days. But the most curious cases are those in which the nature of the accident has not been detected. The head of the bone becomes much altered in figure, and this alteration is very much influenced by the structure on which it presses, whether on the bone or on muscles. Changes likewise take place in the soft parts, new capsular ligaments of condensed cellular tissue are formed by the pressure; the tendons of the muscles, which were torn through, become united, and the muscles accommodate themselves to their new axis; and the limb is thus newly, yet permanently, established. This account shows the folly of attempting to reduce a dislocation, after a long time has elapsed. Even in one case, where the dislocation of the humerus had only existed six weeks, the fibres and tendons of the subscapularis and teres minor were torn through in attempting to reduce it, and caused the death of the patient.

Although dislocations generally arise from violence, and are accom-

panied by laceration of the ligaments of the joint, yet they sometimes happen from relaxation of the ligaments only. This is especially likely to occur where there has been an abundance of synovia secreted, which must have the effect of distending the capsule, thereby weakening the articulation. The patella is sometimes dislocated from this cause. If muscles are put and kept long upon the stretch, their power of contraction is in a great measure lost; or, if from paralysis, they lose their action, a bone may be easily dislocated and reduced as quickly. A person had his arm kept powerfully upon the stretch for an hour, by way of punishment, whilst on board a ship in the East Indies, and he could luxate and reduce his shoulder at pleasure. Dislocations frequently arise from ulcerations of the joints, by which the ligaments are detached, and the bones become altered in their relation to each other—this frequently happens in the hip. There is a preparation in the museum, of the knee dislocated by ulceration, and anchylosed at right angles with the femur. Dislocations are sometimes accompanied with fracture. At the ankle joint a dislocation seldom occurs without fracture of the tibula. Sometimes the acetabulum is broken in dislocations of the hip joint. When a bone is both fractured and dislocated, it is best to reduce the dislocation without loss of time, taking care that the fractured part be strongly bandaged in splints, to prevent any injury being done to the muscles; for, if this be not done at first, it cannot afterwards, without, in all probability, disuniting the fracture. Dislocations are sometimes partial, at other times complete. The ankle is often partially dislocated, resting partly on the astragalus, and in part on the os naviculare. The os humeri is sometimes thrown forward against the coracoid process, resting on the edge of the glenoid cavity. Young persons, and persons advanced in life, have more frequently fractures than dislocations. I have known a dislocation of the hip joint occur in a child nine years old; but these accidents are very rare; what are generally described as cases of dislocation arise usually from ulceration, as I explained to you when speaking of disease in the hip joint. A compound dislocation is that in which the articulating surfaces are not only displaced, but in which there is also a division of the integuments and capsular ligament, by which the cavity of the joint is laid open. It is generally attended with great danger from the inflammation of the lacerated ligament and synovial membrane, which speedily succeeds; this is soon followed by suppuration, and granulations arise from the surface of the secreting membrane. But I should say that it was a very serious injury, or otherwise according to the treatment which it receives. It was the practice formerly to poultice, but this is now laid aside, as it produced a train of bad symptoms, and seldom terminated favourably.

After reducing the dislocation, bring the integuments closely together by adhesive plasters, and let the joint remain undisturbed for several days, and it is probable that adhesion will take place. If there should be great difficulty in reducing the dislocation, as, for example, in the ankle, it is better to saw off the protruded portion of bone, especially when there is great spasmodic action of the muscles; the bone afterwards granulates, and, if passive motion be used in proper time, a very useful joint may be restored. The elbow is not likely to do so well in this case as the ankle; but I shall say more on this subject when I am speaking of the *particular* dislocations.

The difficulty in reducing a dislocation is in proportion to the time which has been allowed to elapse after the accident. In recent cases, it is easily effected, but if it has happened a few days, or at most a few weeks, it is reduced with great difficulty. Still, however, difficulties arise from other causes, which I shall presently mention. If the muscular power be very great, the exertion necessary to reduce the dislocation must be very great also. In such a person the reduction of the humerus ought never to be attempted after three months; but, if the patient be less muscular, four months should be the utmost limit. In the dislocation of the thigh, two months may be fixed on as the time, beyond which it would be wrong to make any attempt, except in a person of very relaxed fibre, when a little more time may be allowed. In those cases where it has been said the dislocations have been reduced a long time after the accident, the patient has never been able to use the joint extensively. Difficulties likewise arise from the head of the bone catching against the articulating cavity, as in the dislocation of the thigh bone into the foramen ovale, and ischiatic notch, where it is necessary to raise the head before it can be returned, or where the head of the bone is larger than its cervix, as in dislocations of the radius, it was thought that the opening in the capsular ligament was too small, and therefore impeded the return of the bone; but such persons must have forgotten that the ligaments are inelastic, and as the opening in it was sufficiently large to allow the head of the bone to pass out, so it must also allow it to be returned through the same aperture. The peculiar ligaments of joints sometimes prevent the reduction of dislocations, as in the knee, where the bone should be moved in such a direction as to relieve that ligament which remains entire. The ligaments of the ankle joint are of extraordinary strength, and the bones of this joint will often rather break than their ligaments give way. The muscles form the principal obstacle to the reduction; the rigid involuntary contraction of the muscles is immense, and this power is proportioned to the length of time which has elapsed after the injury; it continues sometimes even

after death. This power is to be overcome by general relaxation being effected by constitutional remedies, and by gentle but continued force. Hence the great advantage of considering the power and direction of the larger muscles previous to making any attempts at reduction. The most powerful mechanical means would fail, unaided by constitutional remedies. The constitutional means to be employed for the purpose of reduction, are those which produce a tendency to syncope, and this necessary state may be best induced by one or other of the following means: by nausea, bleeding, or the warm bath. Of these I consider bleeding as the most powerful; but in recent cases it is not required. That the effect may be produced as quickly as possible, the blood should be drawn from a large orifice, and the patient kept in the erect position; for by this mode of depletion syncope is produced before so large a quantity of blood as might injure the patient is lost. Where the warm bath is thought preferable, it should be employed at the temperature of 100 to 110, and, as the object is to produce fainting, he should be kept in it till this is effected, then immediately wrapt in a blanket, and the mechanical power applied. It may also be accomplished by giving nauseating doses of tartarized antimony, as a quarter or half of a grain every five minutes; and a good proof of the effect of nausea is, the man's being unable to lift his hand on a level with his shoulder. As its action is rather uncertain, it is better to use it, with a view of keeping up the nausea first produced by the two preceding measures. Another mode of relaxing the muscular power is, by making the patient support a weight with the dislocated arm. The reduction of the bone is to be attempted, after lessening the power of the muscles, by fixing one bone and drawing the other towards its socket. The force should be gradually applied, and it is in this way only that that state of the fatigue and relaxation is produced which is sure to follow continued extension, and not attempt at once to overpower the action of the muscles. Great attention should be paid to the fixing of that bone in which the socket is placed. If, for example, in attempting to reduce a dislocation of the shoulder, the scapula be held by one person, and two pull at the arm, the scapula is necessarily drawn with the humerus, and the extension is very imperfectly made. The most effectual mode of tiring the muscular power is by the pullies, which have this advantage over extension made by assistants, that your force is *gentle* and *continued*, and may be gradually increased, whereas, the exertions of assistants are sudden, violent, and often ill-directed, and such force is more likely to produce a tearing of the parts, than to restore the bone to its former situation. First pass a wetted roller round the limb, and over this buckle on the leather with the rings to which the pullies are to be fixed. Having fixed them on, draw the cord very

gently, until you feel the muscles making some resistance, then rest two or three minutes, and extend again; and so on, until you see the muscles beginning to quiver, and by a little further extension they will be overcome, and the bone easily slips into the socket. Sometimes the bone goes into the joint without producing any noise, therefore care should be taken that the extension be not kept up too long. It is not necessary, in recent dislocations, to use pullies, excepting those of the thigh, in which they should always be used; and they should be used also in dislocations of the shoulder, which have remained long unreduced. The best place to fix the pullies is on the bone to be reduced. The part from which the bone was dislocated must be well secured, as without the aid of bandages the bone will not remain in its situation until the muscles surrounding the joint recover their action. After the reduction, rest is necessary for some time, to allow the ruptured ligaments to unite, which would be prevented by exercise. Rest is the principal thing to be attended to; and guard against an excess of inflammatory action in the joint and neighbouring parts, by an evaporating lotion, as the white wash, and by the application of leeches, if necessary.

DISLOCATIONS OF THE SPINE,

or accidents that are usually considered such. If dislocation of the spine do ever happen, it is a very rare accident, and I have never met with a case of it. Still it is possible that dislocation of the cervical vertebræ might happen, as the articulating processes are more oblique in them than in the other vertebræ. Dislocations of the spine seldom occur without a fracture of the articulating processes, or of the arches of the vertebræ. Whenever fracture happens, displacement is generally the immediate result, and the spinal marrow becomes *compressed* by the arches of the vertebræ. When the cervical and dorsal vertebræ are fractured, the spinal marrow is generally torn, but in the lumbar vertebræ the medulla spinalis becomes firmer, and is not so easily lacerated. The symptoms produced by pressure on the spinal marrow, are a loss of sensibility and of motion in the parts supplied from that portion of the medulla below the accident. The extent of the effects of the injury must therefore depend on its approximation to the brain. If the upper vertebræ be injured, sensation is lost in the upper extremities; if the dorsal vertebræ, or upper lumbar, the lower extremities become insensible; and if the lumbar be injured, the fæces pass involuntarily, and the urine is retained: these phenomena may be accounted for in this way; the nerves of volition supplying the sphincter ani are injured, and the power of retention is lost, whilst the involuntary peristaltic action of the intestines continues; the nerves supplying the acceleratores urinæ being in

part derived from the cauda equina, have their functions destroyed; the will has no influence on the bladder, and the evacuation of the urine is prevented, being opposed by the elasticity of the urethra. When the patient becomes very weak, and is almost dying, the urine passes away stillatitiously from the elasticity of the urethra being diminished. Persons live sometimes three or four weeks after the accident, and in a case or two that I can recollect, they lived between three and four months. One man, indeed, recovered so far, that he could change his place in bed, and dress himself, but he never recovered the use of his lower extremities. When the injury has been received on the dorsal vertebræ, the intestines are very much distended with air, and the functions of the abdominal viscera are very much disturbed. A person having a fracture of the *dorsal* vertebræ commonly lives about a fortnight or three weeks. One gentleman lived rather more than nine months after the accident. But the time you may expect your patient to live will depend very much whether the injury is near or distant from the cervical vertebræ—whether the displacement is slight or otherwise, and upon the degree of injury the spinal marrow has sustained. If the *cervical* vertebræ be broken, death soon follows. Paralysis of the upper extremities is sure to be the result, and also of the lower parts of the body, but this paralysis is not complete. The fourth and fifth cervical are most commonly fractured; the intercostal muscles are paralysed, respiration is very difficult, and wholly performed by the diaphragm, and the patient dies sometimes in about thirty hours, but generally from three to seven days. The abdomen is also distended from flatulency, as when the dorsal vertebræ have been injured. The other symptoms are the same as in fractures below the cervical, as regards the lower extremities, the bladder, and the sphincter ani. If any of the cervical vertebræ be broken above the fourth, death is immediately the result; the phrenic nerve is paralysed, and the action of the diaphragm consequently suspended, and respiration can be no longer performed. Fractures sometimes occur without displacement, and by admitting of unnatural positions of the spinal column, produce symptoms of irritation; and sometimes, by allowing pressure, cause death. This fracture (showing a preparation), without displacement, happened in a child who lived nearly twelve months after the accident; he was obliged to walk very carefully, and to support his head with his hand when he wanted to turn towards any particular object. On dissection, it was found that the atlas was broken through, and that the processus dentatus of the second cervical vertebra had so far lost its support, that under the different inclinations of the head, great care was necessary to prevent its pressing on the spinal marrow. Sometimes portions of the spinous processes are

broken off, but these affect the spinal marrow in no other way than that the blow necessary to accomplish the one usually produces a concussion of the other. Extravasation sometimes takes place into the spinal canal, from very severe blows upon the vertebræ, and if in any considerable quantity, produces the usual symptoms of compression. From the cause just mentioned, the spinal marrow is also liable to concussion. The lower extremities become paralytic, in a degree proportioned to the violence of the injury. The patient lies in great pain, and unable to raise himself; if you desire him to draw his thighs towards his abdomen, he does so with great difficulty. A case of this kind was brought into the other hospital; he was cupped repeatedly in the loins, and afterwards had a blister applied, which was kept open by ungt. sabinæ; his bowels kept open by calomel and other purgatives, and a stimulating linament rubbed daily on the lower extremities. In six weeks the motion and sensation of his legs had almost returned, and he completely recovered at the end of ten weeks. In one case of concussion, it was found, on dissection, that the spinal marrow was lacerated, and the person died with paralysis of the lower extremities and abdomen. It was found in an experiment which Mr. Cline made on the spinal marrow of a dog, that it re-united after dividing it, by pressure. Mr. H. Cline was the first man who took a scientific view of fractures of the vertebræ, attended with displacement. He proposed removing the arch of the displaced vertebræ, by Hey's saw. He performed the operation once, but not successfully, and he had not an opportunity of repeating it. Mr. Tyrrell very lately performed the same operation; he made a incision on the depressed bone, as the patient was lying on his chest, and removed the arch; the patient lived three weeks afterwards. On dissection there was extensive peritoneal inflammation found, but from what cause it arose is difficult to say. There is no reason why the operation should not be performed; it is not difficult; it gives no pain, and the patient cannot recover unless it be tried; it gives him, therefore, the best possible chance. There is a greater probability of recovery in the lumbar than when the injury is received in the dorsal vertebræ.

LECTURE LXX.

Gentlemen, cases of dislocations of the ribs have been described by different authors; such cases must be extremely rare, and must also be very difficult to detect. Their heads are said to be thrown from their articulations on the bodies of the vertebræ. But I have never seen such a case. There is frequently a great irregularity of the cartilages,

which is mistaken for dislocation. This arises from constitutional weakness; the arch of the rib is diminished, the sides flattened, and therefore the extremity of the ribs with the cartilages thrust forward. It is generally the result of rickets. Very rarely a cartilage may be torn from its connexion with the sternal end of the rib, and projects over its surface. The same treatment would be necessary as in fracture of the ribs. Desire the patient to make a deep inspiration, then depress the projecting cartilage, put a wetted pasteboard splint upon the part, and apply a flannel roller over it.

OF DISLOCATIONS OF THE CLAVICLE.

The sternal end of the clavicle is dislocated in two directions, forwards and backwards; most frequently forwards, when it is thrown upon the fore and upper part of the sternum. This accident may be readily distinguished by the swelling seen on the upper part of the sternum; and, if the fingers be carried upon the surface of the sternum upwards, this projection stops them; but, if there be any doubt about it, place your knee against the spine, draw the shoulders backwards, and the clavicle sinks into its natural situation; but immediately you uncover the extension, the swelling again protrudes. If the shoulder be elevated the projection descends, if the shoulder be drawn downwards the extremity of the clavicle passes upwards towards the neck. The motions of the clavicle are painful, and those of the shoulder performed with difficulty. In a thin person, you see immediately the nature of the accident; but in a stout person it is sometimes difficult. The reduction is easily effected in the way just pointed out: apply the clavicular bandage. The arm does not require to be supported. The second dislocation is backwards, behind the sternum: this is a very rare dislocation. I have never seen a case of it arising from injury, but it has happened from great deformity of the spine, which advanced the scapula, and did not leave sufficient room for the clavicle between the scapula and sternum, and it gradually glided behind the sternum; and the pressure of the end of the bone was so great on the œsophagus as to require its removal. It does not produce much difficulty of breathing, because the trachea is pushed to the other side; but the œsophagus is compressed, and produces great difficulty of swallowing. When it arises from deformity of the spine, there is no mode of reducing it. In the case just mentioned, the clavicle was sawn through about one inch from the sternum, by Mr. Davis, late of Bungay, in Suffolk, and very carefully dissected out. This was a very bold operation, but it succeeded perfectly. None but an excellent anatomist would have dared to attempt it. The scapular end is more frequently dislocated than the

sternal. It may be detected by putting the finger on the spine of the scapula, and tracing it forwards towards the acromion, where the finger will be stopped by the projecting portion of the clavicle. The shoulder will be depressed, and drawn inwards towards the sternum, and from the projection of the clavicle it will appear flattened, something like the dislocation into the axilla. This happens from the scapula having lost its support, it being the office of the clavicle to separate the shoulder widely from the sternum, to allow of more extensive motion. In the reduction of this dislocation, you may use the mode that was employed in the dislocation at the sternal end. Let the knee be put between the patient's shoulders, and draw them backwards and upwards, and the clavicle immediately is brought into its place. Then put a thick cushion into each axilla, to keep the scapula from the side, to raise it, and to prevent the axilla from being injured by the bandages. Then the clavicular bandage is to be applied, and its straps should be broad enough to press upon the clavicle and scapula. The arm should be supported in a short sling, so as to keep the scapula well up. These accidents, with the best treatment, will generally leave some deformity; and it is better, therefore, when first called to the accident, to state this to the patient, as he may otherwise suppose that it has arisen from your negligence or ignorance. You may, at the same time, inform him, that a very good use of the limb will be restored, although a slight alteration of the natural form of the parts may remain, such as a little projection on the sternum, or on the sternal extremity of the clavicle.

The humerus is liable to be dislocated in four directions. The first and most common of these is downwards and inwards into the axilla; the bone here rests on the inner side of the inferior costa of the scapula. It may be known by the projection of the acromion, by the natural rotundity of the shoulder being lost, by the deltoid being flattened and dragged down with the head of the bone. The arm is rather longer than the other, and the elbow is carried from the side. Although the arm is longer than natural in a recent dislocation, yet, if the accident has been of some duration, the head of the bone becomes imbedded in the soft-parts, and the limb is then shortened. The elbow is with difficulty brought to the side, from the head of the bone being, in this attempt, pressed upon the axillary plexus of nerves, and the patient will generally come to you supporting the arm with the other hand, to prevent its weight pressing upon these nerves. If the elbow be carried outwards, nearly at right angles with the trunk, the head of the bone can be distinctly felt in the axilla; but this cannot be done if the elbow be allowed to remain close to the side. The raising the elbow throws the head of the bone downwards, and more into the axilla, and therefore

can be more easily felt in the axilla. The motion of the joint upwards and outwards is in a great measure lost, and therefore the patient cannot raise his hand to his head. This question is generally asked, "Can you raise your hand to your head?" The answer invariably is, that he cannot; and you immediately make up your mind that it is a dislocation. The patient can swing his arm a little forwards and backwards as it hangs by his side. The central axis of the limb may also be observed to run into the axilla. There is usually a numbness in the fingers, from the pressure of the head of the bone on the axillary plexus. Well, then, the principal marks of the accident will be, the falling of the shoulder, the presence of the head of the bone in the axilla, and the loss of the natural motions of the joint. But in a short time these appearances are less decisive, from the extravasation and tension which follow. The common causes of a dislocation of the humerus into the axilla, are,—falls upon the hand while the arm is much raised; or by a fall upon the elbow when the arm is raised from the side, by which the head of the bone is thrown downwards. But the most frequent cause of this accident is a fall directly on the shoulder on some projecting body, by which the head of the bone is suddenly driven downwards.

Dislocations are very apt to recur from very slight causes. If the muscular power be considerable, or if the accident has occurred a few days, the reduction is usually accomplished in the following way: place the patient in a chair, let the scapula be well secured by a bandage passed over it, with a slit in it to receive the arm, and buckled over the acromion: this keeps the bandage close up in the axilla, and more completely fixes the scapula; or it may be done by a towel folded round the scapula, and tied close above the acromion. Pass a wetted roller round the arm, just above the elbow, to protect the skin, and upon this a strong worsted tape is to be fastened with what the sailors call the clove-hitch; the arm should be raised at right angles with the body, or a little above it, to relax the deltoid and super-spinatus. Two persons should now make extension from the bandage fastened to the arm, and two from the scapular bandage, with a steady and equal force. After the extension has been made a few minutes, the surgeon should place his knee in the axilla, resting his foot on the chair on which the patient sits, and raise his knee by extending his foot; and placing his hand at the same time on the acromion, he pushes it downwards, when the head of the bone usually slips into its place. While the extension is making, a gentle rotatory motion will diminish the counteracting power of the muscles, and assist the reduction; the fore-arm should be bent to nearly right angles with the upper arm. If the limb has been a long time dislocated, and if the muscles are so firmly con-

tracted that the force to be applied in the way I have just recommended does not succeed, the reduction must be attempted by means of the pullies; more on account of employing the force gradually and equally, than of their increase in power. The patient should sit between two staples to be fixed in the wall, the bandages are to be applied in the way before described, and the surgeon should draw the pulley himself, and the degree of extension be gradually increased until the patient complains of pain, then stop a little and extend again. (Here I may mention to you the great advantage to be gained in engaging the patient's attention, and directing it to some other object during the attempt at reduction). Then extend the arm again, and continue it until the patient again complains; and thus, at intervals of three or four minutes, you may continue the extension for a quarter of an hour. If this pain should not succeed, you must use the constitutional measures before pointed out, and try the extension again. But in the hospital I generally order, when I expect much resistance, the warm bath and nauseating doses of tartarized antimony, to precede the application of the pulleys.

If the patient should be an elderly lady, or a relaxed, emaciated person, you may generally succeed in reducing the dislocation in this way:—Put the person in a low chair; carry the knee into the axilla, by separating the arm sufficiently from the side, and let your foot rest on the foot of the chair; take hold of the arm firmly, just above the condyles, with one hand, and place the other on the shoulder; draw the arm over the knee, raise the knee a little at the same time, and depress the shoulder with the other hand, when the bone will generally slip into its socket. But the mode I usually adopt, in all recent cases, is the following:—Lay the patient on his back, either on a bed or sofa, and bring him near to the edge of it; let a towel be passed over the scapula, in the manner before mentioned, and given to a person to hold fast; then tie a handkerchief above the elbow, having previously passed a wetted roller round the arm, carry the patient's arm from his side, and sit yourself on the edge of the bed; then place your heel in the axilla, and extend the arm: draw steadily for three or four minutes, and the bone is replaced. If more force should be necessary than you can make with the handkerchief, you can pass a towel round the arm in its stead, and let two or three persons pull at it, the heel being still kept into the axilla. This plan I should recommend you to adopt in ordinary cases.

The second dislocation is forwards, beneath the clavicle, upon the second rib, and having the coracoid process on its outer side. This accident is more easily ascertained than the dislocation in the axilla.

The projection of the acromion appears greater, from the depression of the deltoid being more considerable. There is a prominence to be observed beneath the middle of the clavicle; and, on rotating the arm, the head of the bone may be felt to roll; the elbow is thrown from the side, and at the same time carried backwards; and the motions of the arm are more confined than in the dislocation into the axilla. The pain attending this accident is slighter than the one just mentioned, because the axillary plexus of nerves is not compressed. These marks place the nature of the accident beyond all doubt.

The reduction is to be effected by the same means as in the former dislocation. The same bandage should be used and the arm bent; but the direction in which the bone is drawn, is the principal circumstance to be attended to. The extension must first be made obliquely downwards and backwards, until the head of the bone has passed the coracoid process, then it may be raised in a horizontal direction, and, by the pressure of the heel in the axilla, the bone will be easily returned.

The third dislocation is backwards, on the dorsum scapulæ, just beneath the spine. It is readily distinguished by the projection of the head of the bone, and by its following the movements of the elbow when rotated. Only two cases have occurred in Guy's Hospital during thirty-eight years. The bandages are to be applied in the same manner as in the dislocation into the axilla, and the extension made in the same direction, rotating, at the same time, the head of the bone inwards.

The fourth dislocation of the humerus is only partial. It is an accident which frequently occurs. The head of the bone is thrown forwards against the coracoid process; there is a hollow at the back part of the shoulder joint; the axis of the arm is thrown inwards and forwards; the under motions of the arm are still performed, but it cannot be raised, from its striking against the coracoid process. The head of the bone may be felt to rotate. The reduction is the same as that for the dislocation forwards, but the shoulders should also be drawn backwards, to bring the head of the bone to the glenoid cavity. After the reduction, the shoulders must be secured by the clavicular bandage, or the bone will again slip forwards against the coracoid process. An injury of great violence may occasion the head of the bone to be forced through the integuments in the dislocation forwards. The reduction should be immediately effected, as was before recommended in the dislocation forwards. A suture should be introduced, and lint, dipped in blood, applied to the wound, and adhesive plaster, to retain the apposition of the wound; the limb should be kept close to the side, by a roller including the arm, and thus the least motion prevented. By this treatment, the

suppurative inflammation will be prevented, and the patient's life not endangered.

Accidents about the shoulder joint, with which dislocations are liable to be confounded, are, first, fracture of the acromion. Here the roundness of the shoulder is, in some measure, lost, and the head of the bone drops towards the axilla. It may be readily distinguished by the shoulder regaining its proper shape on supporting the arm, and by its again sinking when that support is removed. If you trace the spine of the scapula forwards to the clavicle, on reaching that part the finger sinks into a depression; then raise the arm, and place one hand firmly on the acromion, and rotate the elbow with the other, and you will distinctly perceive a crepitus. In the treatment of this accident, you are to make the head of the os humeri act as a splint, to support the detached portion of bone: with this view, then, you support the elbow in a short sling, and bend the fore-arm across the chest; put a thick pad between the elbow and the side, so as to separate it widely from it, in order to relax the deltoid. Let the motion of the arm be perfectly prevented, by binding it firmly to the chest by a roller: the elbow should be carried a little backwards. The arm should be kept firmly fixed for three weeks; it will unite by bone, if motion be perfectly prevented; but, as this is very difficult to accomplish, the union is generally ligamentous. The second accident is more likely to be mistaken for dislocation than any other; and this is the fracture through the neck of the scapula. It is impossible, by mere inspection, to distinguish this from dislocation into the axilla. It is to be known by carrying the hand over the shoulder, and resting the finger on the coracoid process; then, by rotating the arm, a crepitus will be felt. Let the surgeon place his arm under the arm of the patient, and by raising it a little, he restores the natural appearance of the joint; but, by taking away that support, the shoulder again sinks. The treatment of this fracture is, to place a thick pad in the axilla, to carry the humerus, and with it the glenoid cavity, outwards: to support the humerus in a short sling, to preserve the parts in apposition.

The clavicular bandage will assist in keeping the head of the bone outwards, and the motion of the arm may be prevented by confining it to the chest by a roller. It requires from ten to twelve weeks for its recovery, and continues weak for three weeks after.

The third is the fracture through the neck of the humerus. This may be distinguished in the same way as the accident just mentioned, and, by passing the hand over the shoulder joint, and fixing the head of the humerus with the fingers, whilst, at the same time, having raised

the elbow, and carried the upper part of the humerus a little outwards, you will feel a crepitus on rotating the elbow; but the head of the bone does not follow the rotation of the arm. You are to apply a roller, from the elbow to the shoulder joint, and put a splint on the inner and outer side of the arm, to be confined by another roller; a thick pad is to be placed in the axilla, and the arm gently supported in a sling. The principal difficulty is to prevent the pectoral muscle drawing the body of the bone forwards: but, if the inner splint be properly applied, its influence will be counteracted. It requires from three to six weeks to unite, according to the age of the patient.

OF DISLOCATIONS OF THE ELBOW.

The elbow may be dislocated in five directions; and first, of the dislocation of both bones backwards. This accident is strongly marked by the alteration in the form of the joint, and by its great loss of motion. There is a considerable projection formed posteriorly, by the ulna and radius. On each side of the olecranon there is a hollow; a large hard swelling is felt at the part of the joint, immediately behind the tendon of the biceps, which is the extremity of the humerus. The hand and fore-arm are in a state of supination, and you cannot turn them prone. The cause of the accident is generally this: a person, when falling, puts out his hand to save himself; but the arm not being perfectly extended, the whole weight of the body is thrown upon the radius and ulna, and they are forced behind the axis of the humerus. The dislocation is to be reduced in this way: let the patient be seated on a chair; take hold of his wrist, and put your knee on the inner side of the elbow joint; then bend the fore-arm, and at the same time press upon the radius and ulna with the knee, so as to separate them from the humerus, and so as to throw the coronoid process of the ulna from the posterior fossa of the humerus, where it is lodged. Whilst this pressure is kept up by the knee, the arm is to be forcibly, at the same time, gradually, bent, and the bones will slip into their places. After the reduction, the arm should be kept flexed, and a bandage applied, which should be kept wet with an evaporating lotion, and the arm supported in a sling. The fore-arm should be bent at rather less than a right angle with the upper arm. The elbow may be dislocated laterally, when the ulna will be thrown either on the external or internal condyle. When thrown outwards, the projection is greater than in the dislocation backwards: as the coronoid process, instead of being lodged in the posterior fossa, is thrown behind the external condyle, and the radius forms a protuberance behind, and on the outer side of the humerus, so as to produce a hollow above it; on rotating the hand, the radius may

be felt to move. The ulna is sometimes thrown upon the internal condyle, but it projects posteriorly, as in the dislocation outwards, and the head of the radius is situated in the posterior fossa of the humerus. It may be known by the great projection of the external condyle of the humerus, and by the hollow above the olecranon on the inner and back part of the arm. Its reduction may be accomplished as in the former dislocation, by bending the arm over the knee, without turning it directly outwards or inwards; for, as soon as the radius and ulna are separated from the humerus by the pressure of the knee, the biceps and the brachialis internus, which have been before kept powerfully upon the stretch, gives the bones the proper direction for reduction.

The third dislocation is backwards. The ulna is sometimes thrown backwards upon the humerus, whilst the radius remains in its proper situation. The deformity of the limb is very great, by the fore-arm and hand being twisted inwards, whilst the olecranon projects considerably backwards. The fore-arm cannot be extended, nor can it be bent to more than a right angle.* It is rather more difficult to detect than the other dislocation of the elbow, but it may be known by the projection of the ulna, and the twisting inwards of the fore-arm. It is more easily reduced than when both the bones are dislocated; you may do it readily, by bending the arm over the knee, and drawing the fore-arm downwards. In addition to the action of the brachialis internus, the radius, by resting on the external condyle, will act as a lever to the fore-arm, in pushing the os humeri backwards on the ulna, when the arm is bent. The radius is sometimes separated from its connexion with the coronoid process of the ulna, and is thrown forwards, into the hollow above the external condyle of the os humeri, and upon the coronoid process of the ulna. The fore-arm is slightly bent, but cannot be brought to a right angle with the upper, nor can it be perfectly extended; when bent suddenly, the flexion is checked by the head of the radius striking against the fore part of the os humeri. The hand is between pronation and supination, but neither can be done perfectly, but it is nearer pronation. By carrying the thumb into the fore part of the elbow joint, and rotating at the same time the hand, the head of the radius will be felt to rotate also; and this, with the sudden check to the bending of the fore-arm, are the best marks of the injury. This accident happens from a fall upon the hand when the arm is extended, and the radius receives the weight of the body. In attempting to reduce this dislocation, the hand should be turned supine, the fore-arm should be bent, and extension made from the hand, without including the ulna. Numerous and powerful attempts have been made to reduce this dislocation, and frequently without success; but, by attending to the cir-

cumstances I have just mentioned, I have succeeded in two or three cases; and I have only seen six of these accidents, and one of these was a patient of Mr. Cline's.

Of the dislocation of the radius backwards, I have never seen a case in the living body; but a subject was brought into our dissecting room with this accident: I have no doubt but that it might be easily reduced by bending the fore-arm; a bandage should afterwards be worn.

The dislocations of the wrist joint are of three kinds.—First, of the dislocations of both bones. This is not of very frequent occurrence; but the bones may be either thrown backwards or forwards, according to the direction of the force applied. If a person in falling receives his weight upon the palm, the carpal bones are thrown backwards, and the radius and ulna forwards. The marks of the accident are these: a swelling is produced by the radius and ulna on the fore part of the wrist, and a similar swelling is seen on the back part, with a depression above it. The hand is forcibly bent back. If a person fall on the back part of the hand, the carpus is forced under the flexor tendons, and the radius and ulna are thrown upon the back part of the hand. These two projections become the diagnostic marks of the accident, and will distinguish it from a swelling on the fore part of the hand, about the flexor tendons, in consequence of a violent sprain; as in this case there is only one swelling, and it does not appear immediately after the accident, but gradually increases in size. The reduction of this dislocation, in either form, is not difficult. Grasp the patient's hand with your right, and support the fore-arm with your left hand, whilst an assistant places his hand firmly round the arm, just above the elbow. Then let both extend, and the bones are soon replaced. The muscles will direct the bones into the proper situation, as soon as the extension is sufficiently made. A roller should be applied round the wrist, wetted with an evaporating lotion, and a splint be placed before and behind the fore-arm, reaching to the extremities of the metacarpal bones.

The radius only, is sometimes thrown forwards upon the carpus; in this case, the outer side of the hand is thrown backwards, and the inner forwards. The extremity of the bone forms a protuberance on the fore part of the wrist. The extension necessary to produce this dislocation, and the after treatment, are the same as when both bones are displaced. The ulna is sometimes separated from the radius by the rupture of the sacriform ligament, and it usually projects backwards. It is known by its projection above the level of the os cuneiforme, and by its being easily returned by pressure to its former situation, and by its rising again when the pressure is removed. After you have put the

head of the bone into its place, put a compress of leather on its extremities, to keep it in a line with the radius. Splints should be placed along the fore-arm, and a roller applied over the splints to confine them with firmness.

LECTURE LXXI.

DISLOCATIONS OF THE BONES OF THE CARPUS.

GENTLEMEN, a dislocation of a carpal bone is of very rare occurrence, and generally happens to a person, when falling, receiving the weight of the body on the part; and it is also sometimes attended with a fracture of the radius. It has happened also, from relaxation of the ligaments of the carpus. I have known the os magnum and the os cuneiforme thrown out of their natural situation from this cause, and form a projection at the back part of the wrist on bending the hand. This deprives the person of the power of using the hand, unless the wrist is at the same time supported. In these cases, straps of adhesive plaster should be braced rather tightly about the wrist, to support and strengthen it; and over these you should pass a bandage, which would afford it additional support. Pumping cold water upon the hand, from a considerable height, is also very useful, and rubbing the parts afterwards with a coarse towel gives vigour to the circulation, and increases the strength of the joint.

Sometimes ganglia are mistaken for dislocations of the carpal bones: but these are easily removed by striking them smartly with the flat surface of a book, and the supposed dislocation immediately disappears.

A *compound dislocation of the carpal bones* frequently happens; it arises, generally, from the bursting of guns, or the hand being caught in machinery. In these cases, one or two of the carpal bones may be dissected away, and the patient recover without losing his hand, and also preserve a considerable degree of motion in the part. If, however, greater injury be done, amputation is generally necessary.

I have seldom seen the *metacarpal bones* dislocated, except as the result of excessive violence. They are so firmly connected with the bones of the carpus, that great force is necessary to separate them, and so much injury is done to the parts, that amputation is generally required. These cases usually happen from the bursting of guns, or the passage of heavy bodies over the hand. If it should happen that the metacarpal bones of the middle and ring fingers require to be removed, you may bring the fore and little fingers so nicely together as to produce little deformity; that is, if you can succeed in procuring union by adhesion.

DISLOCATIONS OF THE FINGERS AND TOES are rare; for, in addition to their capsular and lateral ligaments, their articulations are powerfully strengthened by the extensor and flexor tendons. When the accident does occur, it is more frequently found between the first and second phalanges, than between the second and third. It can be readily ascertained, by the projection of the first phalanx backwards, while the head of the second can be felt on the fore part, although less distinctly. If it has not been dislocated many hours, you can easily reduce it; but, if it has been neglected at first, the reduction can only be accomplished by long continued extension, and that very steadily applied. It should be recollected to give the joint a slight inclination forwards, to relax the flexor muscles. I would never advise you to divide the ligament of the joint in order to facilitate its reduction. No, I have seen too much evil attending it ever to recommend such a practice. The dislocations of the toes are rather more difficult to reduce than the fingers, as the phalanges are much shorter, and the parts less easily moved, from their being less stiff. A toe or finger is sometimes thrown out of its natural situation by the flexor tendon and theca, or even the palmar fascia becoming contracted, as the effect of chronic inflammation, from excessive action of the parts, as in rowing or ploughing. When the thecæ are contracted, nothing should be attempted, as no operation will succeed; but when a thickened band of fascia appears to be the cause of the contraction, it may easily be divided by a pointed bistoury introduced through a very small wound in the integument. The finger should be then extended, and kept in this position by a splint.

Dislocations of the Thumb.—On account of the numerous strong muscles inserted into the thumb, its dislocations are very difficult to reduce. These muscles necessarily offer great resistance when the attempt is made to restore the parts to their proper situations, and I consider, therefore, the dislocations of the thumb the most difficult to reduce, especially if any time be allowed to elapse after the accident before the attempt at reduction be made.

The *metacarpal bone* is sometimes dislocated from the trapezium. I have seen many cases of this accident, and in most of them I have found that it has been thrown inwards, between the trapezium and the root of the metacarpal bone of the fore finger. Considerable pain and swelling are produced by this accident, but it may be detected by the protuberance formed towards the palm of the hand, by the thumb being bent backwards, and not allowing of its being brought towards the little finger. What I have before said respecting the relaxation of muscles

inserted into a dislocated part, is particularly necessary to be attended to here. You know that the flexor muscles are much stronger than the extensors, and you will, therefore, very much facilitate the reduction by giving the thumb a little inclination towards the palm of the hand; in this manner the flexors may be relaxed, and their resistance diminished. The extension must be steadily continued for a considerable time, as no sudden violence will effect the reduction. The mode of doing this, I shall describe presently. If the bone cannot be reduced by simple extension, it is better to leave the case to the degree of recovery which nature will in time produce, than run any risk of injuring the nerves and blood vessels, by dividing the muscles or ligaments. A compound dislocation of this bone is sometimes produced by the bursting of guns; but, in these cases, you can easily return it to its natural situation: and, if the flexor tendon should have escaped unhurt, the person may recover useful motion of the part. You should bring the integuments together as nicely as you can, confine them by a suture, if necessary, and over this put a piece of lint dipped in blood, which is the best application; if necessary, you must apply a poultice, but where the bruise has not been very considerable, it will heal by the adhesive process. A case of this kind occurred a short time since, from the explosion of a powder-flask, in the hand of a young gentleman, at Brentford; the thumb was only connected to the hand by the tendons of the long extensor and flexor; it was treated in the way I have just recommended, and passive motion employed at the end of a fortnight, by which the motion of the joint was so restored as to enable him to write without any inconvenience.

Dislocation of the First Phalanx.—In the simple dislocation of this bone, you will find it thrown back upon the metacarpal bone, where it forms a projection; and the lower part of the metacarpal bone projects inwards, towards the palm of the hand. The thumb may be brought towards the fingers, but the flexion and extension, which are performed between the metacarpal bone and the first phalanx are prevented by the dislocation. Here also the direction in which the extension is to be made must be attended to; the thumb should be bent towards the palm, in order to relax the flexor muscles, and the mode of applying the extending force is as follows, which may be generally adopted in dislocations of the toes, thumb, and fingers:—In order to relax the parts as much as possible, the hand should be soaked for a considerable time in warm water, a piece of wetted wash leather is to be as closely wrapped round the first phalanx as possible; a tape, about two yards in length, should be fastened on the leather with a knot which will not slip, such as sailors call the clove hitch. An assistant should now firmly press on

the metacarpal bone, by putting his middle and first fingers between the fore-finger and thumb of the patient, and thus make counter-extension, whilst the surgeon, assisted by others, draws the first phalanx from the metacarpal bone, inclining it at the same time a little towards the palm of the hand. If the efforts made in this way, after having been continued ten or fifteen minutes, should not succeed, then it will be necessary to adopt another plan, which is this: in addition to the apparatus already employed, let a strong worsted tape be carried between the metacarpal bone and fore-finger, bend the fore-arm round a bed-post, and let the tape be firmly tied to it, so as to prevent the hand yielding when extension is made. To the tape surrounding the first phalanx, a pulley is to be applied, and extension made, which will generally succeed. With the greatest care and attention, and with the most persevering efforts, you will sometimes fail in reducing this dislocation where it has been neglected, and much time allowed to intervene between the occurrence of the accident and your attempts at reduction. Although this should be the case, no division of the parts should be made, as the patient will have, after a time, a very useful thumb. In compound dislocations of the first phalanx, if the wound be large, and much difficulty is experienced in the reduction, I would advise you rather to saw off the extremity of the bone, than injure the parts further by the pressure which would be necessary. Lint dipped in blood should be applied to the wound, a roller lightly passed round, and evaporating lotions to be used for several days until the wound be healed. If passive motion be begun early, a very useful joint will be formed.

A Dislocation of the Second Phalanx, when simple, will be best reduced by grasping firmly the back of the first phalanx with your fingers, and placing the thumb on the fore part of the dislocated phalanx, then bending it on the first as much as you can. In this way you may lift the second over the lower part of the first phalanx, by making your thumb the fulcrum. When there is a compound dislocation of this joint, in addition to the sawing off the ends of the bone, you should pare the ends of the tendon smoothly with the knife, and if you then bring them together they will unite. Passive motion should be begun at the end of a fortnight or three weeks.

OF DISLOCATIONS OF THE LOWER JAW.

The lower jaw is subject to two species of dislocation, the *complete* and *partial*. When the jaw is completely dislocated, both its condyles are advanced into the space between the surface of the temporal bone and zygomatic arch. When it is partial, one condyloid process only

advances, whilst the other remains in the articular cavity of the temporal bone.

The jaw is known to be completely dislocated by the mouth being open, and the patient not being able to shut it by any pressure which you may make on the chin. The lower teeth will be found in a line anterior to the upper. You may depress the jaw a little, but to a very inconsiderable extent. The appearance is just that of a person when yawning. There is a depression just before the meatus auditorius, from the absence of the condyloid process from its cavity, and there is a projection of the cheeks, from the coronoid processes being advanced towards the buccinators. The pain, although severe, is not attended with any dangerous consequences; a considerable degree of motion is recovered by time, and the jaws nearly approximated. The saliva is very much increased in quantity, in consequence of irritation of the parotid glands, and it dribbles over the mouth. A blow upon the chin, when the mouth is widely opened, will cause this accident. Yawning very deeply will also sometimes produce the same effect. The jaw has also been dislocated in the attempts made to draw teeth, by a sudden action of the hand when the mouth has been too widely opened. In the partial dislocation of the jaw, the mouth is not so widely opened as in the complete dislocation, but the patient cannot close it, from the condyloid process on one side being advanced under the zygoma. This accident is easily distinguished, by the chin being thrown to the opposite side of the dislocation, the incisor teeth are advanced upon the upper jaw, but are no longer in a line with the axis of the face. When you are first called to this accident, the patient presents a very ludicrous appearance, from the twist which is given to the face; it is, on the whole, however, a serio-comic spectacle. These dislocations are generally reduced, by wrapping a handkerchief around the thumbs; placing them on the coronoid processes, and depressing the jaw, you force it backwards as well as downwards, and the bone suddenly slips into its place. In a recent dislocation, this mode will succeed very well, but not so easily as the modes which I shall presently describe to you. I should advise you to place some body that will not injure the gums, behind the molar teeth on each side of the mouth, and for this purpose I know no better material than two corks, and then raise the chin over them. This practice is very effectual in reducing the dislocation, and is less likely to injure the bone or the soft parts. I have also used two forks for the same purpose. Having wrapped a towel or handkerchief round their points, I carried their handles into the mouth on each side behind the molar teeth; they were then held by an assistant; and,

drawing the chin towards the upper jaw, the bone was easily and quickly reduced.

Mr. Fox, the late dentist, has used a lever of wood, about a foot long; he placed the end of it on the molar tooth on one side, then supported the outer part of the piece of wood with one hand, and depressed the end on the tooth with the other, and with the force thus used, he succeeded in reducing the jaw; he then did the same on the other side, and thus completely replaced the bone. This mode is best adapted, I think, for the cases in partial dislocation; but I generally prefer the corks, the recumbent posture, and the elevation of the chin.

An imperfect dislocation of the jaw sometimes happens from a relaxation of the ligaments, something in the same way as that in which the thigh bone is thrown from the semilunar cartilages. The jaw appears to quit the interarticular cartilage of the temporal cavity, slips before its edge, and fixes the jaw, the mouth being at the same time slightly opened. The natural efforts generally restore the situation of the parts, but I have seen it continue for a length of time; yet the motion of the jaw, and the power of closing the mouth, have returned. You must, in your attempt to return the jaw, press directly downwards; by which you separate the jaw, from the temporal bone, and allow the cartilage to replace itself on the extremity of the condyloid process. A snapping is sometimes heard when the bone is returned to its socket. Young women are generally the subjects of this complaint, and I have frequently found the ammonia and steel, with the shower-bath, and a blister before the ear, remove the disposition to the re-appearance of the accident. These means accomplish this, of course, by giving a general tone to the system, and also to the relaxed parts. When the jaw has been once dislocated, it is easily displaced again from a slight cause, and therefore the motions of it should be limited; this will be best done by making a hole in the middle of a broad tape, to receive the chin, and split the ends into two parts, bring one over the top of the head, and the other over the occiput, and the tendency to subsequent luxation will be prevented.

I shall now proceed to speak of

DISLOCATIONS OF THE HIP JOINT.

It perhaps may cause no little astonishment in some of you, when I say, that there was a period in the history of surgery, and that not very remote, in which the dislocation of the thigh bone was considered an impossibility; but, gentlemen, such is the general advancement of the science, and such are now the opportunities of acquiring information, and such the improvements of modern surgery, that *pupils* now know

much more than their *professors* formerly did. As a proof of this I can tell you that the dressers of Guy's Hospital a short time since, were not only able to distinguish this dislocation, but they knew also how to reduce it, and actually accomplished it, without even having occasion to send for the surgeon.

I have seen the thigh bone dislocated in four directions:—1, upwards, or upon the dorsum of the ilium; 2, downwards, or into the foramen ovale; 3, backwards and upwards, or into the ischiatic notch; 4, forwards and upwards, or on the body of the pubis. [The lecturer now mounted a chair, and imitated the position of the dislocated limb in the varieties which he had described.] Another dislocation has been described by some surgeons, namely, downwards and backwards. No such accident has occurred in Guy's, or at St. Thomas's Hospital, within the last thirty years, neither have I met with a case of the kind in my private practice. I will not deny the possibility of its happening, but I very much doubt it; and I think there must have been some mistake in the description.

First, of the dislocation upwards, or on the dorsum of the ilium; this happens more frequently than any other dislocation of the hip joint, and it may be known by the following signs:—The toe rests against the tarsus of the opposite foot; the knee and foot are turned inwards, and the knee is a little advanced upon the other; the limb is about one inch and a half, or two inches and a half, shorter than the other, and this may easily be detected, by comparing the malleoli interni when the foot is bent at right angles with the leg. If you try to separate the leg from the other, you find you cannot do it, as the abduction of the limb is completely prevented, but you may bend the thigh a little across the other. The trochanter is less prominent than on the opposite side, from the neck of the bone and the trochanter lying in a line with the surface of the ilium; the roundness of that side will, therefore, have disappeared. When called to this accident, you must expect to find great extravasation, which will conceal, in some degree, the situation of the parts; but by rotation of the knee inwards, the head of the thigh bone may be felt, and the trochanter major approaches the anterior superior spinous process of the ilium. Well, then, when you are called to this accident, what you must expect to find will be a difference in the length of the limb, a change of position inwards, a diminution of motion, and a flattening of that side by the altered situation of the trochanter major.

This accident may be distinguished from fracture of the neck of the thigh bone, within the capsular ligament, with which it is most likely to be confounded, by symptoms which are sufficiently distinct to a per-

son who is commonly attentive. In the fracture of the neck, the knee and foot are turned outwards, the trochanter is drawn upwards and backwards, resting on the dorsum ilii; you may bend the thigh towards the abdomen, although it gives some pain. But one of the principal marks of the accident is, that although the limb may be shortened one or two inches, according to the duration of the accident, yet, by extension, you may restore the natural length of the limb, but the limb is again shortened immediately on your removing the extending force. If, when you have drawn down the bone, you rotate it, you can distinctly feel a crepitus, but this ceases to be felt when the limb is allowed to be again shortened. Fractures of the neck within the capsular ligament occur but rarely, except in advanced periods of life, and are produced by slight causes; this is owing to the interstitial absorption which this part of the bone undergoes in age. Thus, then, you see that the increased mobility of the parts, the easy extension of the limb, and its then producing a crepitus, will readily distinguish the one accident from the other. No man who possesses a good knowledge of anatomy, or who has paid attention to his profession, could ever confound dislocations arising from violence, with diseases of the hip joint. The gradual progress of the symptoms, the pain in the knee, the apparent elongation at first, and the real shortening afterwards, the power of motion remaining, yet that motion producing pain, especially under the extremes of rotation, are marks of difference which must strike the most careless observer.

The consequences of a disease of this kind, when it has existed a great length of time, are such a change in the situation of the parts, from the ulceration of the ligaments, head of the bone, and acetabulum, as to make the limb appear like a dislocation. But the history of the case at once points out its nature.

The dislocation on the dorsum ilii is produced by the patient falling when the knee and foot are turned inwards, or by a blow being received while the limb is in that position. The following plan is to be adopted in attempting to reduce this dislocation:—Bleed the patient to twelve or twenty ounces, or more, if he be a very strong man. Next place him in a warm bath, at 100 deg, gradually increase it to 110 deg., until he begins to feel faint. Whilst he is in the bath, give him one grain of tartarized antimony, until he feels nausea; then wrap him in a blanket, and place him on a table, between two strong posts, into which two staples have been fixed; or if you cannot find a convenient place for this, place him on the floor, and screw two rings, about the distance I have mentioned, into the floor. The plan I usually adopt is, to place him on a table covered with a blanket, on his back; then a

strong girt is passed between his pudendum and thigh, and this is fixed to one of the staples. A wetted linen roller should be applied just above the knee, and on this a leather strap is to be buckled, having two straps with rings at right angles with the circular part. The knee should be slightly bent, not quite at a right angle, and brought across the opposite thigh a little above the knee. The pullies are to be hooked to the rings on the circular strap, and fixed to the other staple. You should now tighten the pullies, till you see the bandage is on the stretch, and the patient begins to complain of pain; then wait a little, with the degree of extension you have now made, to give the muscles time to fatigue; then draw again gently, and when the patient complains much, stop again, until the muscles yield; and so go on, until you find the head of the bone is brought just opposite the acetabulum. Let the same extension be kept up, by another person taking the string of the pullies; and then rotate the limb gently, and the bone will generally slip into its place. You must not expect to hear a snap when the bone is returned, as, by using the pullies, the muscles are so much relaxed that they cannot act with sufficient violence; and you can, therefore, only tell if it is reduced by loosening the bandages, and comparing the length of the limb. If there should be any difficulty in bringing the head of the bone over the edge of the acetabulum, you may pass your hand or a napkin under it, and lift it over the edge of the socket. You should take great care in removing a patient to his bed, as, from the relaxed state of the muscles, the dislocation would again happen, and that from a cause so trifling that you would not suspect it to have occurred. I consider it the birthright of every man to think and act for himself. Gentlemen, do not let your opinions be shackled by prejudice—do not follow implicitly the dictates of any man; and, if, when you get into practice, you do not find the advice which I have given you on this, or any other subject, correct, then throw it aside, as totally unworthy of your confidence, and strike out a new path for yourselves. Much as I respect the talents of Mr. Hey, and there is no man who thinks more highly of his zeal and acquirements than I do, yet I cannot agree with him in recommending the mode which he practised. It is true, that in a very recent dislocation, before the muscles have established their fixed contraction, that extension will succeed in returning the bone, even although that extension be not made in the way most favourable for the purpose. What I have said in these lectures has been the result of considerable experience, both in public and private practice, and in the greater number of cases the treatment has been successful, even in some under circumstances the most unfavourable.

Of the dislocation *downwards*, or into the *foramen ovale*.—The

limb, in this case, is two inches longer than the other. By making pressure with the hand on the upper and inner part of the thigh, you can, in thin persons, distinctly feel the head of the thigh bone. There is a flattening of the hip on that side; the body is bent forwards, owing to the psoas magnus and iliacus internus being put upon the stretch. If you desire the patient to stand upright, you find that the knee is considerably advanced towards the trunk. It is widely separated from the other knee, and it cannot be brought to touch it without much difficulty and pain. The foot is generally neither turned outwards or inwards, but the toes point to the ground. In this dislocation, you do not trust so much to the foot as a mark of it; the increased length of the limb, the separated knees, the bent position of the body, are such diagnostic appearances as sufficiently point out the nature of the injury. It generally happens when the thighs are widely separated from each other, that the ligamentum teres and capsular ligament are torn through, and the head of the bone is situated on the obturator externus muscle, at the inner and back part of the thigh.

If the accident has recently happened, the dislocation is very easily reduced. Place the patient on his back, separate the thighs as widely as possible, and place a girt between the pudendum and upper part of the thigh, fix the girt to the staple in the wall, then take hold of the ankle of the dislocated side, and draw it over the other leg, or, if the thigh be very large, behind the sound limb, when the head of the bone usually slips into the socket. Or the thigh might be secured by a bed-post being received between the pudendum and the upper part of the limb, and the leg be carried inwards across the other. But the best plan, in general, is to fix the pelvis, by a girt passed round it, and crossed under that which passes round the thigh, to which the pullies are to be attached, otherwise the pelvis moves in the same direction as the thigh. If the dislocation has existed for three or four weeks, it is better to place the patient on his sound side, and fix the pelvis by one bandage, and carry another under the dislocated thigh, to which the pullies are to be affixed perpendicularly; then draw the thigh upwards, and, at the same time, press down the knee and foot, to prevent the lower part of the limb being carried with the thigh, and you thus use the limb as a lever of considerable power. But, take care not to advance the leg too much, as the head of the bone would be forced behind the acetabulum into the ischiatic notch, from which it would be extremely difficult to remove it.

LECTURE LXXII.

ON DISLOCATIONS OF THE THIGH BONE.

GENTLEMEN.—It is exceedingly curious and interesting, both to the physiologist and to the surgeon to observe the efforts set up by nature for the restoration of lost or injured parts; and in no instance is this more conspicuous than in dislocations of the thigh bone, which have remained long unreduced. Here, gentlemen, are some beautiful specimens (referring to what were on the table), in which you may see the accommodation of the head of the bone to the surface with which it has been brought into contact; here are new capsular ligaments, produced from condensations of cellular tissue; here are new acetabula, formed by the pressure of the head of the bones, causing a partial absorption of the bones on which they rest, assisted also by the deposit of matter in the surrounding parts, resembling cartilage. In this preparation, particularly, which is a dislocation into the foramen ovale, you see the obturator externus completely absorbed, as well as the ligament of the foramen ovale, and its place occupied by a deposit of ossific matter. Bone is also deposited around the foramen, so as to form a deep socket, in which the head of the thigh bone is enclosed, and surrounding its neck so closely, that you could not remove the bone without breaking the edges of its new socket; this is extremely smooth on its inner surface, and allows of very extensive motion of the joint, which appeared to be limited only by the action of the muscles. The cartilage on the head of the bone remained, and the shape of the head itself very little altered; whilst the original acetabulum was nearly half filled by bone, so that it could not have received the head of the thigh bone, even if it had been attempted to be returned into its former situation. These preparations show the extreme folly of attempting to reduce a dislocation of the thigh after a certain time has been allowed to elapse; and they also show that it is better to leave such cases to the degree of reparation which nature will ultimately produce.

I shall now speak of the *dislocation backwards*, or into the *ischiatic notch*.

The situation of this notch, with respect to the acetabulum in the natural position of the pelvis, you should accurately bear in mind, recollecting that it is placed behind the acetabulum, but, at the same time, above its level. And it strikes me, that it is the want of attention to this circumstance that has led some surgeons to describe this dislocation as having occurred downwards and backwards; they have done this from viewing the os innominatum detached from the

trunk, and not considered its obliquity when connected with it. When the head of the bone, therefore, is thrown into this space, it is placed backwards and upwards with respect to the acetabulum; therefore, although I call it the dislocation backwards, you must remember that it is also placed a little upwards.

The head of the bone is placed on the pyriformis muscle, between the edge of the upper part of the notch and the sacro-sciatic ligaments. Of all the dislocations of the thigh this is the most difficult to detect, because the length of the limb differs but little, and its position is not so much changed as respects the knee and foot, as in the dislocation upwards. It is also the most difficult to reduce, because the head of the bone is placed behind the acetabulum, and requires to be lifted over its edges, as well as to be drawn towards it. This dislocation may be known by the following signs:—The limb is from half an inch to an inch shorter than the other, but usually not more than half an inch, and the toe rests against the ball of the great toe of the opposite foot. The natural prominence formed by the trochanter major is lost, but it still remains nearly at right angles with the dorsum, but it has a slight inclination towards the acetabulum. Except in very thin persons, you cannot feel the head of the bone, and then only by rolling it a little forwards. The knee and foot are turned inwards, but less so than in the dislocation upwards; the knee is only very slightly bent, and, therefore, is not so much advanced as in that dislocation. The toe touches the ground when the patient is standing, but not so the heel. Flexion and rotation are, in a great degree, prevented, from the limb being so firmly fixed. Here (showing a preparation) is a very good specimen of this dislocation, which from its appearance, must have been many years in its present situation. A new capsular ligament is formed, the original acetabulum is entirely filled up by a ligamentous substance; but there is no attempt made to form a new bony socket for the head of the bone.

This dislocation is produced by the knee being pressed inwards, whilst bent at right angles with the abdomen, or whilst the trunk is bent forwards on the thigh. The reduction is generally extremely difficult, but is best effected in the follownig way:—Let the patient be laid on a table, on his side, and a girt passed between the pudendum and inner part of the thigh, to fix the pelvis; then pass a wetted roller round the knee, and buckle the leather strap over it; let a napkin be carried under the upper part of the thigh; next, bring the thigh over the middle of the opposite one, and then begin to make your extension with the pullies. Whilst the extension is making, an assistant should grasp firmly the napkin at the upper part of the thigh with one hand; and, resting the other hand on the pelvis, he should lift the thigh as

much as possible towards the acetabulum, so as to get the head of the bone over its edge. I have also directed a round towel to be used for this purpose; this is passed beneath the upper part of the thigh, and then carried over the shoulders of an assistant, who then rested both hands on the pelvis, and, by raising his body gently, raised the thigh with it. If the assistant should be very short (said the Lecturer smilingly), why, he might rest one foot on a chair, and place the other on the pelvis of the patient, and might in this way, perhaps, raise the bone as effectually as a descendant of the race of the Titans—(*a laugh.*)—This dislocation has been reduced by making extension with the pullies in a right line with the body; and at the time this extension was made the trochanter major was thrust forwards with the hand. But the former method is the most easy, and is that which I generally adopt.

Of the Dislocation on the Pubes.—This accident happens in the following manner:—If a person, whilst walking, puts his foot into some unexpected hole, he throws his body suddenly backwards, to preserve his equilibrium, and the head of the bone starts forwards on the pubes. It is much more readily detected than any other dislocation of the thigh. The principal marks are these:—The limb is an inch shorter than the other, and the knee and foot are turned outwards, and cannot be rotated inwards; but the most striking mark of the dislocation is, that the head of the thigh may be felt upon the pubes, above the level of Poupart's ligament, to the outer side of the femoral artery, and feels like a hard ball there, which will readily move on rotating or bending the knee. Easy as this dislocation is to detect, I have known three cases in which it has been overlooked until it was too late. This could only arise from great carelessness; and that man really deserves the appellation of a blockhead, who, in the present day, would allow such an occurrence to take place.

This accident need never to be mistaken for a fracture of the neck of the thigh bone, as the head of the bone on the pubes will point out, to the most superficial observer, the nature of the accident. To reduce this dislocation, you place the patient on a table, on his side; then carry a girt between the pudendum and the inner part of the thigh, and fix it in a staple, a little before the line of the body. The roller is to be passed around the thigh, and the pullies fixed as in the dislocation upwards, and the extension is to be made in a line behind the axis of the body, the thigh bone being drawn backwards. After this extension has been continued some time, pass a napkin under the upper part of the thigh, whilst an assistant, resting one hand on the pelvis, lifts the head of the bone over the pubes and edge of the acetabulum.

From what I have had an opportunity of observing on the subject of

dislocations, I think that the relative proportion of cases will be as follows:—Now, if I take the number as twenty, there will be twelve on the dorsum ilii, five in the ischiatic notch, two in the foramen ovale, and one on the pubes. From the frequency of the occurrence of these accidents, it is astonishing that they should have escaped the observation of surgeons of former times, and these, too, of some eminence in the profession. Is it not gratifying, on the other hand, to contrast the present state of information in the profession with what it was about fifty years ago? What should we think of a surgeon in this metropolis, with all the opportunities of seeing diseases in the large hospitals of this city, who doubted the existence of a dislocation of the thigh, when we find that surgeons in the country are able immediately to detect these injuries, and generally succeed in reducing them? Let us never forget, however, that it is to the knowledge of anatomy that we are indebted to this superiority, to the study of which we cannot devote too much attention, and to acquire an intimate knowledge of which we should consider no sacrifice too great, if we wish to establish our reputation as surgeons, or humanely to discharge our duties to mankind.—(Repeated and long continued applause.)

Before I proceed to describe the other dislocations, I shall speak of the *Fractures which happen at the upper part of the Thigh Bone.*

It is not only necessary, accurately, to distinguish these accidents from dislocations, with which they might be confounded, but also from each other. Three distinct species of fracture, very different in their nature and result, have been described under the indiscriminate name of fracture through the neck of the thigh bone. It is my wish to draw deductions from facts; differences of opinion avail nothing in the advancement of science, unless we can appeal to facts for their support. What I shall say to you on this point will be the result of my observations on persons who have been the subjects of these accidents, of numerous examinations of the dead body, and of my experiments on the lower order of animals. These accidents are much more frequent than dislocations; for whilst, on an average, we have only two dislocations in the year, our wards are seldom without an example of fracture of the upper part of the thigh bone. These fractures are three in number: First, where it happens through the neck of the bone entirely within the capsular ligament; secondly, through the neck, at its junction with the trochanter major, by which the trochanter is split, and the upper piece is driven into it; thirdly, a fracture through the trochanter major, beyond its junction with the cervix.

Of Fracture within the Ligament.—The leg becomes from one to two inches shorter than the other, for the connexion between the cervix and

trochanter being destroyed, the trochanter is drawn up by the muscles, as far as the ligament will permit, and it rests on the edge of the acetabulum, and on the ilium. You can detect the difference in length best, by desiring the patient to lie down on his back, when, by observing the two malleoli, you will readily detect it. The heel generally rests in the hollow between the malleolus internus and tendo achillis of the opposite leg, although there is some variety in this respect. The retraction is at first easily removed, by drawing down the limb, and you make it appear of the same length as the other, but immediately on removing your extension, the muscles will draw it into its former position, and this will be the case as often as you like to repeat the experiment. This you can do until the muscles acquire a fixed contraction, which enables them to resist an extension that is not of a powerful kind. The next circumstance which marks this injury is the eversion of the foot and knee; this is caused by the power of the external rotatory muscles, which are inserted into the thigh bone, and which are opposed but by feeble antagonists.

On the first sight of a patient, then, there are two things that will particularly strike your attention—the shortening of the injured limb, with an eversion of the foot and knee, in the dislocation upwards, the head and neck of the bone prevent the trochanter from being drawn backwards, whilst the neck of the bone, being shortened by the fracture, readily admits of it, and this is the reason why the limb is inverted in the one, and everted in the other. The limb has been found everted, but it is a very rare occurrence. Some hours must elapse before this eversion becomes decisive in its character, as the muscles require some time to contract firmly, and this is the reason why it has been mistaken for a dislocation upwards. In this fracture the patient suffers but little pain when at rest in the recumbent posture. But on rotation a pain is felt, from the rough end of the bone grating against the synovial membranes lining the capsular ligament. The thigh may be perfectly extended, but flexion is more difficult, and attended with pain; this is increased if the thigh be directed towards the pubes, and lessened if carried outwards. If you should have any doubt now remaining as to the nature of the accident, let the patient stand by the side of his bed, supported by an assistant, and you will have all the appearances which I have before named present; and if he attempt to bear on the injured limb, it will produce much pain, which is occasioned by the psoas magnus and iliacus internus being put on the stretch, as well as by the pressure of the roughened surface of the bone, on the inner part of the capsular ligament. A crepitus is also discoverable, when the limb is drawn down, so as to be of the same length as the op-

posite one, and then rotated, but not so when the patient is lying on his back, with the limb shortened. It occurs more frequently in women than in men. This probably may be accounted for by the more horizontal position of the neck of the bone, and the comparative feebleness of constitution in the former. It occurs in persons of advanced age, and it is a mistake to talk of its happening in young persons. Although I have been now thirty-nine years at Guy's and St. Thomas's Hospitals, and have had more than my share of the practice of the metropolis during that time, I have seen more than two hundred and twenty-five cases of fracture of the neck of the thigh bone, within the capsular ligament, yet I have only known two persons in whom this accident occurred under fifty years of age. This fracture, then, rarely happens under fifty years of age, and dislocation seldom at a more advanced period. But the most common period at which fracture occurs is between fifty and eighty.

The reason why the bone breaks so much more readily in age, is, that there is a peculiar process taking place in age, which is producing an entire alteration in the structure of the head and neck of the bone. The natural changes which thus take place in the bones, in different periods of life, are remarkable; they increase in bulk and weight in youth, they remain stationary during the adult period, and become lighter and softer in the more advanced stages of life. You may cut the bones of old persons with a penknife, which you could not do at the adult period. The neck of the bone undergoes an interstitial absorption, by which it becomes shortened and altered in its relation with the shaft of the bone; so that the head of the bone, instead of being above the level of the trochanter, sinks almost to its root. Indeed, the bones of an old person may be readily distinguished in the skeleton from those of a person at the middle period of life.

The slightest causes often produce fractures in this state of the bone. The way in which they usually happen in London is, from the person slipping off the foot pavement, and though it is only the descent of a few inches, the unexpected shock acting perpendicularly on the cervix, with the advantage of a lever, produces a fracture. The patient immediately falls, and the accident is very frequently improperly attributed to this circumstance. Even turning suddenly round has produced it.

The union of this fracture has been the cause of much difference of opinion. It has been said that these fractures will unite like fractures in other parts of the body, by bone; but I have taught for the last thirty years, in these lectures, that, as a general principle, fractures of the neck of the thigh bone, of the patella, olecranon, coronoid process of the ulna and condyles of the os humeri, unite by ligament, and not

by bone. In all the examinations which I have made of transverse fractures of the cervix femoris within the capsule, I have had my opinions confirmed, as I have not met with a single instance in which bony union had taken place. I would not maintain its impossibility, but what I wish to be understood to say is, that if it ever does happen, it is an extremely rare occurrence, and that I have never met with a single example of it. Whilst, to support a contrary opinion, only a single instance has been produced, having the shadow of plausibility; and in this case the same appearances were found in both the thigh bones, and even these resembled what I have often observed in the dead body, arising from a softened state of the bones.

There are several reasons which may be assigned for the want of ossific union in the transverse fracture of the cervix within the ligament. The *first* is a want of the proper *apposition* of the fractured ends of the bone. It is scarcely possible to preserve the parts in apposition even for a few hours, and the slightest change of position produces an instant contraction of the large and powerful muscles passing from the pelvis to the thigh, so that the ends of the bone become immediately displaced. This is also the case in fractures of the patella, where, notwithstanding all our efforts to prevent the retraction of the muscles, it very seldom happens that we can succeed in supporting a complete approximation of the bones. The *second* reason for a want of bony union is, the *want of pressure* of one bone on the other. Even if the limb were preserved at its proper length, and admitting the capsular ligament not to be torn, this circumstance would operate to prevent an ossific union. There is a large quantity of synovial fluid secreted into the joint; this distends the ligament, and entirely prevents the contact of the bones. After a time this fluid becomes absorbed, but not until the inflammatory process has ceased, and ligamentous matter has been effused into the joint from the surface of the synovial membrane. That cause which so powerfully conduces to the union of other fractures is wanting here, viz. the pressure which the *muscles* produce on the broken extremities of bones; for if two broken bones overlap each other on that side on which they are pressed together, there will be an abundance of ossific matter deposited; but on the opposite side, on which there is no pressure exerted, scarcely any change will be observed. But the *third* and principal reason is, the almost entire absence of ossific union in the head of the bone when detached from its cervix. The principal supply of blood to the head of the bone being derived from the ligamentum teres, which has only a few minute vessels ramifying from it on the bone, the natural supply of blood for the neck and head of the bone is derived from the periosteum; and when the neck

is fractured, and the periosteum torn through, the means of ossific action are necessarily cut off. No deposit of cartilage or bone, as in other fractures, is produced, but there is a deposition of ligamentous matter covering the surface of the cancellated structure. On dissection of these accidents you find that the cancelli are rendered firm and smooth by friction, as in other bones which rub on each other when their articular cartilages are absorbed. Portions of bone remain attached by ligament, or are loose and floating in the joint, covered by ligamentous matter; but these do not excite inflammation any more than similar portions which are found in the knee or in the elbow joints. The capsular ligament and the synovial membrane are very much thickened from the inflammation which they have undergone, and are therefore very much strengthened. This membrane is sometimes separated from the fractured portions, so as to form a thick band, passing from the fractured edges of the cervix to the head of the bone. Ligamentous matter passes also from the cancellated structure of the head to the neck, thus uniting, by a flexible material, the one broken portion of bone to another. It appears then, as a general principle, that *ossific union is not produced.* I have seen the two preparations of Mr. Stanley, at Bartholomew's, which were supposed to be specimens of that union, but these have the same appearances on each side: now it is very probable that age or disease might produce similar effects in both bones, but it would be very difficult to suppose that accidents would do so. In experiments which I have made on animals in perfect health, the union was always by ligament. One of the best proofs, however, is a preparation of Mr. Langstaff's in which the bone is fractured within and without the capsular ligament; that without is united by bone, and that within the capsule is united by ligament. I have often seen that appearance in the necks of the thigh bones of old people, supposed to represent the union of a fracture through the cervix by bone. But the truth is, that it is occasioned by the absorption of the neck of the bone, in the way I have before described, allowing of the descent of the head of the bone just opposite the root of the trochanter major. Here, gentlemen, is the thigh bone of an aged female (holding it up to the class), in which this change has taken place; now, where is the neck of this thigh bone? Can you see it? No, I am sure you cannot, for it has gone to the tomb of all the Capulets.

I must defer speaking of the treatment of these accidents until the next lecture.

LECTURE LXXIII.

ON FRACTURES OF THE NECK OF THE THIGH BONE.

GENTLEMEN, I shall now speak of the treatment of fractures of the neck of the thigh bone, within the capsular ligament. Numerous measures have been adopted for the purpose of producing an ossific union of this fracture, both by myself and others, but all to no purpose. Disappointed in the attempt, and finding the patient's health suffer from the necessary confinement, what I now direct to be done, is, that a pillow be placed under the limb, throughout the whole length, and another be put under the knee, and the limb be in this way extended for ten days or a fortnight, until the inflammation has subsided. Then let the patient get out of bed, and sit on a high chair, to prevent the limb being too much bent, afterwards walk with crutches, bearing gently at first on the foot, then increase the pressure more and more, until the ligament becomes thickened, and the power of the muscles increased. Next, let him use a shoe with a high heel, which would very much diminish his lameness. The patients treated in this way, as you have an opportunity of observing, walk after a few days with crutches, then with a stick, and in a few months requires no additional support. But in all cases in which the slightest doubt may be entertained, whether the fracture be within or without the capsule, it is much better to treat them as if they were external to the capsule, and which fractures will unite by bone.

Of Fractures external to the Capsule, and when the neck of the bone is driven into the cancellated structure of the trochanter major; this accident is marked by the leg being from half to three quarters of an inch shorter than the other. The foot and toe are everted, much pain is felt at the hip, and on the inner and upper part of the thigh, and the usual rotundity of the joint is lost. The first diagnostic mark of this fracture is that it happens in the young, and in persons under fifty years of age; although I have known it later. But, if the symptoms which I have before described, are seen at any age under fifty, it will generally be found to be a fracture external to the ligament, and is capable of union by ossific matter. Yet it must also be remembered, that this fracture may occur in more advanced age, and therefore requires care in the discrimination of the two. The second sign of this accident is, that it is usually the result of some very severe injury, as blows received on the part, from falling upon some projecting body, or from heavy carriages passing over the limb; whilst the fracture within the capsule occurs from any slight cause. It may be known, in the third

place, by the crepitus, which is produced by a slight motion of the limb ; and it is not necessary, in this accident, to draw the leg down to feel the crepitus, as the retraction is not so great as in the former accident. There is also usually great extravasation into the surrounding parts, and this swelling is quickly followed by great tenderness to the touch. There is also violent pain produced upon slight motion of the joint, followed by a high degree of constitutional irritation; and many months elapse before the patient recovers a proper use of the limb. The principle to be attended to in the treatment of this fracture is, the approximation of the bones by pressing the trochanter towards the acetabulum ; at the same time preserving the length of the limb, by applying a roller around the foot of the injured leg, and binding it firmly to the sound one ; thus making the sound limb afford support. and act as a splint to the fractured one. A broad leather strap should be buckled around the pelvis, and include the trochanter major, so as to press the fractured portions of the bone firmly together; and the best position in which you can place the limb is in a straight line with the body. I have also known cases do very well where the patient has been laid on his back on a mattress, and the thigh brought over the double inclined plane, which may be very easily made by three boards; one passing from the tuberosity of the ischium to the foot, and the two others having a joint in the middle, by which you can increase the elevation of the angle as may be required; over these a pillow should be thrown. A long splint should be then placed on the outer side of the thigh, fastened above with a strong strap around the pelvis, and secured below by another strap round the knee, so as to prevent the knee being moved from its position. This must be persevered in for several weeks, and the patient may then be allowed to rise from his bed, if the attempt do not give much pain. He must still, however, wear the strap around the pelvis; and he thus recovers, with a useful but shortened limb.

Of Fractures through the Trochanter Major.—Fractures through the trochanter major are generally oblique, and they may happen without any injury being at the same time done to the neck of the bone. They happen at any period of life, and are marked by the following symptoms: the limb is very little, and sometimes not at all shortened; there is a numbness in the foot; the patient cannot turn in bed without assistance, and the attempt is productive of great pain. The trochanter is sometimes drawn forwards towards the ilium, sometimes it falls towards the tuberosity of the ischium, but is generally widely separated from that portion of the bone remaining in connexion with the neck. The foot is greatly everted, and the patient cannot sit, as any attempt

to do so produces very great pain. You can feel a crepitus with great difficulty, if the detached portion of the trochanter be either much fallen, or much drawn forwards. This fracture unites very firmly, and the patient recovers a good use of the limb.

This accident then, it appears, may be easily known by the separation of the bone at the fractured part, so that the finger may be placed between the fractured portions; by the crepitus, felt by putting the fingers on the trochanter when the knee is advanced; by the upper portion of the trochanter not following the motions of the lower, and of the shaft of the bone; and when at the lower part of the trochanter, by the great over-lapping and distension; it is followed by an excessive deposit of callus.

The treatment of this accident is much the same as that of the former: you should pass a wide bandage round the pelvis, and keep the limb extended, and the patient in the horizontal position, in the way before pointed out. Sometimes the bone is fractured just beneath the trochanter, and the deformity produced by this accident is very great, which is caused by the upper end of the bone being drawn upwards by the action of the psoas magnus and iliacus internus. The proper way to treat it is by raising the thigh over an inclined plane, and elevating the trunk to about an angle of 45 deg. In this manner you bring the ends of the bone in apposition, but you should not attempt to depress the upper end of the bone, as it only increases the patient's sufferings to no purpose.

I shall next speak of

DISLOCATIONS OF THE KNEE JOINT;

And, first, of *Dislocations of the Patella.* The patella may be dislocated in three directions—outwards, inwards, and upwards.

The bone is most frequently thrown on the *external* condyle, and produces there a great projection; the patient is also unable to bend the knee, and these circumstances readily point out the nature of the injury. It is most frequently produced by a person falling with his knees turned inwards, and his foot at the same time turned outwards, and the action of the muscles in the attempt made to prevent the fall draws the patella over the external condyle of the femur. It generally happens in those persons who have naturally a little inclination of the knee inwards. The dislocation on the *internal* condyle is less frequent, and happens from a blow on the outer side of the patella, received in a fall on some projecting body. To reduce either of these dislocations, you are to place the patient in the recumbent posture, and let the leg be raised, by lifting it at the heel, by which you relax the extensor muscles of the thigh in the

greatest possible degree; you then press on that edge of the bone which is furthest from the articulation, and this raises the inner edge of the bone over the condyle of the femur, and it is directly drawn into its proper position by the action of the muscles. Evaporating lotions of *spirit* and *water* are to be employed, and afterwards, say in two or three days, bandages should be applied.

In the *dislocation of the patella upwards*, the ligamentum patellæ is torn through, and the patella is drawn on the upper and fore part of the thigh bone. The marks of this accident are at once decisive; for, besides the easy motion of the patella from side to side, a depression is felt above the tubercle of the tibia, from the laceration of the ligament. The patient loses the power of bearing on the limb, and a considerable degree of inflammation usually succeeds. You should, in the treatment of this case, apply leeches, and afterwards evaporating lotions, from four to seven days; then apply a roller round the foot and leg, and keep them completely extended by a splint behind the knee; then buckle a leather strap above the knee, and to this let another strap be fastened, which is to be passed under the foot, and buckled to the opposite side of the circular strap. The bone is in this way drawn down to the ruptured ligament, and a union consequently takes place. The patient should, at the same time, continue in the sitting posture, so as to relax the extensors of the leg which are inserted into the patella.

Of Dislocations of the Tibia at the Knee Joint.—These dislocations are four: two complete, and two incomplete. In the dislocation *inwards*, the tibia projects on the inner side of the joint, and the condyle of the femur rests on the external semilunar cartilage. The tibia is sometimes thrown on the *outer side* of the joint, the condyle of the femur being placed on the inner semilunar cartilage, and the deformity produced is just as much as in the dislocation outwards. The tibia is sometimes dislocated *forwards*; the external marks of the injury are these: the tibia is raised, the thigh bone is depressed, and thrown rather to one side, sometimes so much so as to compress the popliteal artery. In the dislocation *backwards*, the limb is shortened, the condyles of the femur project, and there is a depression of the ligament of the patella, and the leg is bent forwards. Each of these dislocations may be reduced by simple extension, for, as soon as you remove the surfaces of the bones from each other, the muscles give them the direction necessary to be restored to their proper situations.

Partial Dislocations of the Femur from the Semilunar Cartilages.—In these cases, where the secretion of the synovia into the joint has been very much increased, the ligaments become so much relaxed, as to allow the cartilages to glide on the surface of the tibia, especially if the

edge of the cartilage is pressed by the thigh bone. This accident was first accurately described by the late Mr. Hey, of Leeds, who was a scientific and successful practitioner, and had the advancement of the profession at heart. The most common cause of this accident is the person striking his toe against some projecting body, when the foot is everted. He immediately feels pain in the knee, and it cannot be completely extended. I have also known it happen from a sudden twist inwards, when the foot is turned out. The manner in which the accident happens is as follows: The ligaments uniting the semilunar cartilages to the head of the tibia become relaxed, the cartilages are easily pushed from their situations by the condyles of the femur, which therefore come into contact with the head of the tibia. When the limb is attempted to be extended, the edges of the semilunar cartilages prevent it. Now the mode of restoring the parts to their natural position is clear, namely, to bind the limb back as far as possible, by which you remove the pressure made by the thigh bone, and this enables the cartilage to slip into its place, and the condyles of the femur are again received on the semilunar cartilages. This accident is particularly liable to happen again, and the return of it is best prevented by a bandage made with a piece of linen having four straps attached to it, and these are bound tightly above and below the patella.

Of *Compound Dislocations of the Knee Joint*, I have only seen one example. This required an immediate amputation; and, it is probable that in all these accidents, unless the wound is very small, so as to allow of its ready closure and adhesion, that a similar practice will be necessary.

I shall next speak of

FRACTURES OF THE KNEE JOINT.

And, first, of *Fractures of the Patella.*—The patella is generally broken transversely, but sometimes longitudinally.

In the first of these the upper part is drawn from the lower by the action of the muscles inserted into it, whilst the lower part remains fixed by its ligament. The degree of separation depends on the laceration of the ligament. The accident is at once known by the depression between the two portions of bone into which you may put your fingers, and by the upper part of the bone moving readily on the lower and fore-part of the thigh. The power of extending the limb is also lost; and the knee bends forwards from a loss of action of the extensor muscles. Soon after the accident, extravasation takes place on the fore-part of the joint, and produces a livid appearance, but this is removed by absorption in a few days. There is afterwards considerable effusion from

inflammation into the surrounding parts. It happens either from blows on the patella, or from the action of the muscles. The union of this fracture is generally by ligament, whether the separation of the bones be great or little. But still the principle which should guide you in the treatment is, to make that ligament as short as possible. If the upper end of the bone be retracted by the muscles, the ligament connecting the bones is long, the patient walks very lame, and is liable to fall and break the other patella.

When called to this accident, you should place the patient on a mattress, extend the limb on a well-padded splint, which is placed behind the thigh and leg. The patient should be raised as much as he can to the sitting posture, to relax the rectus; an evaporating lotion of *white wash* should then be applied, and the heel should also be raised towards the trunk, to bring up the lower portion of the patella. If there should be much inflammation, existing for a day or two, leeches must be applied, and an evaporating lotion continued; and, when the tension has subsided, you may apply your bandages. The mode generally adopted is, to pass a roller from the foot to the knee, to prevent the swelling of the leg; then rollers are applied above and below the joint, under which a piece of broad tape is passed on each side, which crosses the rollers at right angles, and, by taking these, the upper portion is brought down towards the lower. But the plan which I like best is this:—Buckle a leather strap around the thigh, above the fractured portion, and from this another strap should be passed beneath the foot, the leg being kept extended, and the foot raised: this strap is brought up on the other side of the knee, and buckled to the circular strap above the knee; a roller should also be applied on the leg. After keeping the limb in this position five weeks, you may begin to use slight passive motion, taking great care, however, not to do too much, as you would separate the ligamentous union which had been formed. You may increase this from day to day, until the limb can be bent perfectly. The smallest distance at which I have known it to unite is half an inch, and the greatest distance seven inches; a moderate distance is one or two inches. It sometimes happens that, from the degree of separation, the patient loses the command over the motions of the leg; and, in such cases, you must exercise the extensor muscles by letting the patient swing his legs over a table, in order to accommodate the muscles to their new line of action. Unless this be done, or passive motion be used, the patient can never recover the use of the limb.

In the *longitudinal fracture*, the bone also unites by ligament. I have seen it unite by bone, but it was rather a fissure than a fracture. The treatment will be to apply leeches and evaporating lotions; in a

few days a roller should be applied, and then a laced cap, with a strap to buckle above and below the knee, with a pad on each side of the patella, to bring the parts as nearly as possible into contact.

Compound Fractures of the Patella are very dangerous accidents, frequently proving fatal to life, from the violent degree of constitutional irritation which they occasion. They are generally recovered from by the following treatment:—Bring the integuments together by a small suture, apply adhesive straps round the knee, evaporating lotions on the fore-part, and the limb kept extended by a splint passed beneath. Whenever a joint is laid open, except by a valvular opening, that wound is difficult to heal from the flowing of the synovia, and is, therefore, very difficult to treat; but, if the integuments be brought together by a suture, the parts beneath often heal by the adhesive process. The suture should not be kept in more than a week.

In *Fractures of the Condyles of the Femur*, extending into the joint, which are known by the great swelling that takes place into the joint, by the crepitus and the deformity, you should place the limb on a pillow in the extended position, for then the head of the tibia keeps the extremities of the bone in their places. You should apply evaporating lotions, and leeches, if necessary, to subdue the inflammation, and then mould a piece of stout pasteboard, moistened, round the knee, and bind it on with a roller. This, when dry, adapts itself equally to the different surfaces, and forms a most excellent splint to retain the fractured extremities of the bones. After five weeks you should commence passive motion, or otherwise anchylosis will take place. The same observations apply to *fractures of the head of the tibia*.

OF THE DISLOCATIONS OF THE ANKLE JOINT.

This articulation is well protected by numerous strong ligaments; the union of the fibula particularly is so firm to the tibia and the tarsal bones, that it generally happens that the bone will rather break than the ligaments give way. I have seen the tibia dislocated in three directions—inwards, forwards, and outwards; and a fourth, backwards, is sometimes said to occur. The *dislocation inwards* is most frequent. The foot is thrown outwards, and its inner edge rests upon the ground: the internal malleolus projects so much against the integuments as to threaten their laceration. The foot easily rotates on its axis: there is also a depression above the malleolus externus, attended with great pain; and about three inches above the lower end of the fibula a crepitus may be felt. This accident generally happens from a person jumping from a considerable height, or from running violently with the toe turned outwards, the foot being suddenly checked in its motion

whilst the body is carried forwards on the foot, and the ligaments on the inner side of the ankle give way. By grasping the leg about three inches above the ankle, and freely rotating the foot, a crepitus of the fibula will be perceived. To reduce the dislocation, place the patient on a mattress on his injured side, and bend the leg at right angles with the thigh, so as to relax the gastrocnemii; let an assistant grasp the foot, and gradually draw it in a line with the leg. You should, at the same time, fix the thigh and press the tibia downwards, to force it on the articulating surface of the astragalus. After the reduction, let the limb remain on its outer side in the bent position, with the foot well supported: a many-tailed bandage should be applied, and kept wet with the spirit wash. The patient may leave his bed and walk on crutches at the end of five weeks; friction and passive motion should be used at the end of eight weeks, and twelve weeks will elapse before he has the perfect motion of the joint.

Of the Dislocation forwards.—Here the foot appears much shortened and fixed, and the toes pointed to the ground. The lower end of the tibia forms a hard swelling on the middle of the tarsus. The heel appears lengthened, and there is a projection before the tendo-achillis. On dissection, it is found that the tibia rests on the navicular and internal cuneiform bones, the fibula is broken, and carried forwards at the side of the tibia, and it is fractured about three inches above its malleolus. It happens from the body falling backwards whilst the foot is confined, or from a person jumping from a carriage in rapid motion, with the toe pointed forwards. In reducing this dislocation you should lay the patient in bed on his back, an assistant should grasp the thigh at its lower part, and draw it towards the body, whilst another pulls the foot in a line from the leg, and you then push the tibia back, to bring it into its proper place; attending to the same rule of relaxation of the muscles and the after-treatment as in the former dislocation. The patient should afterwards rest the leg on the heel, apply splints on each side of the leg, with foot-pieces to support the foot at right angles with the leg. In five weeks you may allow the patient to get up, and use passive motion, as the fibula will, by that time, have united. In the *partial dislocation forwards*, the tibia rests half on the os naviculare and half on the astragalus; the fibula is broken, and there is not any considerable projection of the heel. The toe is pointed downwards, and there is great difficulty in putting the foot flat upon the ground. The heel is drawn up, and the foot is, in a great degree, immoveable. The treatment is the same as in the complete dislocation forwards.

Of the Dislocation outwards.—This is the most dangerous of the three, as it is produced by greater violence, and is attended with more

laceration of ligament, and more contusion of the integuments. The foot is thrown inwards, and its outer edge rests upon the ground. The malleolus projects very much, and forms such a decided prominence that the nature of the injury cannot be mistaken. The toes and foot are pointed downwards. In this accident the malleolus internus is obliquely fractured, and it happens from the wheel of a carriage passing over the leg, or by the foot being twisted in jumping or falling. To reduce this dislocation, you place the patient on his back, bend the thigh at right angles with the body, and the leg at right angles with the thigh; let the foot be held firmly by one assistant, and the thigh grasped under the ham by another; then extend the foot in a line with the leg, and press the tibia inwards towards the astragalus. The limb should be laid on its outer side, resting on splints with foot-pieces, and a pad should be placed on the fibula, above the outer ankle, extending a little way up the bone, so as to support that part of the leg. The after-treatment will be the same as in the former cases. Passive motions should be used in six weeks.

Compound Dislocations of the Ankle Joints may take place in the same direction as the simple, and the bones and ligaments suffer in the same way. Great local inflammation and constitutional disturbance attend this accident; the cause of these is the wound which is made into the joint, and the great efforts required to repair it. The principle to be observed is this:—Close the wound as completely as possible, to assist nature in the adhesive process by which the wound is to be closed, thus rendering suppuration and granulation less necessary for the union of the opened joint. The reduction is to be effected in the same manner as I have before described in simple dislocations. Apply a little lint, dipped in blood, to the wound, put on a many-tailed bandage, which is to be kept wet with spirits of wine and water, and the limb should rest on its outer side. But in the dislocation outwards it is best to keep the foot on the heel, with a splint and foot-piece on the outer and inner side of the leg. The knee should be slightly bent, and care taken that the foot does not become pointed.

LECTURE LXXIV.

ON COMPOUND FRACTURES.

After some operations had been performed at the theatre of Guy's Hospital, Sir Astley presented himself to the pupils, and said that he intended to take advantage of the present opportunity of their being together, to make some remarks on compound fractures, to describe the

mode in which they become united, and to detail their treatment under common and under adverse circumstances.

A *Compound Fracture* is that in which there is an external wound communicating with the broken extremities of the bone. Large wounds may occur at the same time with fractures, but unless these communicate with the bone, they are not called compound fractures. The immediate result of the fracture is the escape of the extravasated blood, which, in simple fracture, becomes absorbed. The effect this injury produces on the constitution is to set up a violent re-action, so as to bring about a restoration of the injured part. The degree of this effort of the system will very much depend on the manner in which the accident is treated; and I should say, that it was an important injury, or otherwise, according to the plan of treatment which is pursued. For if you are careful in the management of the case, you may procure adhesion of the external wound, and thus reduce the accident to the state of a simple fracture. The mode of union is ultimately the same; but in one kind of injury ossific matter is deposited in cartilage *without* a suppurative process, and in the other *with* it. If you do not procure an union by adhesion, it is brought about by granulation, and in the following way:—The blood, which is at first poured out in consequence of the division of the vessels of the medullary membrane and the periosteum, instead of being confined in the surrounding structures, passes off by the external wound; yet it must be remembered that this effused blood has no share in producing union of the ends of the bone, as it becomes, after a few days, entirely absorbed. Next, there is a fluid poured out between the periosteum and the bone, which separates the periosteum from the surface of the bone for about an inch or an inch and a half beyond the place where the bone is fractured. This fluid does not cause a laceration of the vessels of the periosteum, but rather an elongation of them. Now here is the difference between the simple and compound fracture; for, in the former, the fluid, after accumulating for a day or two, becomes in a great measure taken up by the absorbents, and adhesive matter is poured out in its stead; but in the latter, a suppurative process is established, and granulations arise from the broken surfaces. In these granulations cartilage becomes deposited, and continues to be formed for some time; the discharge of pus gradually diminishes, and in compound fracture cartilage continues to be formed until about the twentieth day. It is deposited between the internal surface of the periosteum and the external surface of the bone. At the place where bones are brought into contact, the periosteum becomes absorbed, and cartilage is deposited between them, in which patches of

bony matter are formed, and these, when completed, are covered by an extension of the original periosteum.

The cause of the non-union of fractures is the want of approximation; for if the fractured ends are not brought into contact, the periosteum is not raised, the cartilage that forms does not cover the extremities of the bones, and the protruding portions are removed by the absorbents, so that the process of union only goes on in those surfaces of bone which are lying in contact.

Under the granulations arising from the cancellated structure, cartilage is also found, and about the twelfth day in simple, and from the seventeenth to the twentieth day in compound fracture, there are bony patches deposited in the cartilage; it is by the accumulation of these patches that ossific union takes place. A compound fracture is necessarily slower in its progress towards recovery, from the causes just explained, than a simple fracture; and the union is frequently retarded by exfoliations of bone, which will often take up a tedious time to separate, and keep up considerable constitutional irritation. *Three months* may be considered a short time for the union of a compound fracture to take place; sometimes the accident is not recovered from in nine months, and occasionally, not even in twelve.

I shall now proceed to speak of their *treatment under common circumstances.*

Reduce the bones as speedily as you can, and this may be very easily done by relaxing the muscles acting upon the limb. Bring them as nearly into apposition as possible. and if there be slight hemorrhage, do not be searching for a small vessel, but place a little lint over the wound, and by making gentle pressure on it, you may easily suppress the hemorrhage. I shall have some further remarks to make on this subject, when speaking of the difficulties sometimes attending these accidents. Next bring the integuments as neatly over the parts as you can, and dip a dossil of lint in the blood, and put it on the surface of the wound, which irritates the least of any application I know of, and appears to approach the nearest of any other to the natural covering of the parts. In this way the wound unites by the adhesive process, and the union of the bone goes on as in simple fracture, and is cured in one-fourth part of the time which would be required if the wound were allowed to be filled by granulations. This being the principal object, you should always aim at it, unless the fracture be accompanied with severe contusion of the soft parts, when you must apply a poultice in order to facilitate the discharge from the wound, and promote the separation of the parts to be removed. As, for example, a wound caused

by a heavy body passing over the limb, the parts must slough, and therefore it would be useless to attempt to procure an union by adhesion. If the wound communicating with the fracture be caused by the ends of the bone or any sharp instrument, you may generally succeed in procuring an adhesion. But do not apply adhesive plaster, as it frequently produces erysipelas on the edge of the wound, and on this account I have latterly put a bit of lint on the edges of the wound, after extirpating the female breast, and the adhesive plaster over it. Then apply the many-tailed bandage loosely, so that it may give way to the tension that follows; you should also apply some evaporating lotion, and the material of which the bandage is made is a very good thing for retaining the fluid for the purpose.

Splints should afterwards be put on; those made of wood are the best, and one should be put on each side of the limb. Do not apply the splints tightly at first, so as to cause pain, but see that they are well padded, and the bones nicely adjusted. In a few days it often happens that inflammation arises, and a discharge of pus follows, when the lint which was at first applied should be partly removed, and the matter allowed to discharge. If the matter should be small in quantity after you have let it out, replace the lint carefully, and do not apply a poultice, but continue the use of the cold wash. If, on the other hand, the discharge of matter be considerable, or if it be a contused wound, with a tendency to slough, then you should apply fomentations and poultices, and heal the wound by a granulating process.

The *position* of the limb may be just the same as in simple fracture; with this exception, that if the suppurative process should be set up, the wound will require dressing, and therefore it will be necessary to have the limb in a convenient position for that purpose.

If the *leg* be fractured, it should be bent, and laid on its outer side, for if it rest on the heel, then the fractured part is without support, and it requires very great attention to prevent deformity of the limb. If, while the leg is lying on its side, you allow the toe to fall, the foot becomes everted, and the patient seldom recovers a useful limb.

If the fracture is in the *thigh*, it should be placed over a double inclined plane, with a splint on each side; that on the outside should reach from the trochanter beyond the knee; and both in this and the former fracture you should keep the ball of the great toe in a line with the inner side of the patella. I do not like the extended position of the limb, because the muscles are put upon the stretch, and there is danger of a shortening of the limb ensuing. This was the practice about fifty years ago. The lateral position of the limb, asrecommended

by Mr. Pott, I also object to, for two reasons; the first is, that it is almost impossible to keep the toes from falling; the consequence is, that the foot is turned out; and I have seen several patients treated by Mr. Pott for this accident, who had this deformity. The second objection to the practice is, that the limb, from being kept long in the extended position, causes the motion of the knee joint to be very much diminished, and there is great difficulty subsequently in restoring it.

In compound fracture of the *humerus*, let the arm hang by the side, with the fore-arm and hand very slightly supported in a sling, so that its weight may not be entirely taken off the humerus, for it will tend materially to preserve the apposition of the ends of the bone. Do not keep the patient in bed, for in the recumbent posture the arm is generally placed across the chest, the arm is put on the twist, and the fracture unites badly.

A compound fracture of the *femur* generally does better than a compound fracture of the leg, because the bone is so much surrounded by muscle that the wound made is much more easily closed, and is not therefore followed by the same degree of suppuration.

The humerus generally does well when fractured, on the same account. The worst cases are those of the fore-arm and leg, from inflammation and sloughing of the tendons in the one, and the superficial nature of the covering of the bone in the other.

The *constitutional treatment* required in these accidents will be regulated by the force of the symptoms; but there are a few circumstances which I consider important for you to become acquainted with. If the patient be young and plethoric, take blood from the arm sufficient to allay the constitutional suffering, but do not give purgatives, as they very much disturb the patient, and add to the irritation, by the necessity which there is of his being frequently moved. Nothing is so bad in the treatment of compound fracture as the frequent changing of the positions and dressings of the patient; it is a state of rest which is necessary for the recovery of the parts, and therefore, the less they are disturbed the better. Give opium to quiet the irritation, and give also, at the same time, the saline mixture, with the liquor antim. tartarizat. to keep up the secretion of the skin.

I shall next speak of the *difficulties sometimes met with in the treatment* of these accidents; and, first, of the difficulty which now and then exists in the *reduction* of the bone, which occasionally arises from a portion of skin being nipped under the projecting extremity of the bone. When you try to extend the limb, you find you cannot bring the skin into its place. If this projecting portion of the bone be not large, make an incision through the integuments, and turn them on one side suffi-

ciently to reduce the bone, and afterwards try to unite the parts by the adhesive process.

When you experience any difficulty in the reduction of a *fracture* which is very *oblique*, do not divide the integuments, as the probabilities are that the periosteum has been injured on the exposed bone, and that it would afterwards separate by a tedious process of exfoliation; the vitality of the part is very low, and the wound necessary to be made to replace the bone would be a large one. But what I advise you to do is, to saw off the sharp projections of the bone at the extremities of the fractured portions, and then carefully replace the bone in its proper situation. The muscles will draw the ends of the bone together, even if it be shortened. Do not adopt this practice, however, where there are two bones, and one is not fractured, for if the broken or the sawn surfaces be not brought into contact, no ossific union can take place. I know that some cases have been published by a very ingenious surgeon, in which it was supposed that ossific union had taken place between the separated portions of the tibia; but I think that this union was effected by a tough ligamento-cartilaginous material, and not by bone.

If the *bone be very much shattered*, and several pieces be detached and loose, remove them, but with the greatest degree of care, so as to avoid irritating the wound more than is absolutely necessary. If these portions of bone be not removed, they will produce excessive irritation, and will very much retard the healing of the wound by frequent exfoliations. But if the pieces be large, do not detach them, for if they be connected by periosteum they will again unite; or if there be one large piece, and the periosteum on it is entire, let it remain.

Compound fractures are often attended with *hemorrhage from large arteries*, which have been wounded by the broken extremities of the bone. It was formerly the practice to amputate in these accidents, whenever any vessel of importance was wounded, under the supposition that the injury could not be repaired, and that gangrene would, in all probability happen. But I have seen so many limbs saved, even when the principal artery going to the limb has been torn, that I am induced by experience to adopt a different plan. I will just give you a table of some of these cases, and mention their results. Sometimes the anterior tibial artery is torn through. In a case which I perfectly recollect, the vessel was taken up by a tenaculum and secured, and the patient did very well. In one case, where the posterior tibial artery was wounded, it was secured by ligature, and the patient also did well. But in another case of the same kind the man died, but the hemorrhage was stopped by pressing a piece of lint into the wound, and the artery was not tied.

The introduction of extraneous bodies into the wound to suppress hemorrhage is wrong in compound fracture, as they produce too much irritation, and do not effectually answer the proposed object. It is better in some cases, in which you have great difficulty to secure the vessel at the wound, not to be twitching and pulling, and continually irritating the wound, and frequently to little purpose, but to cut down at once on the artery, in its course to the part. If, for example, the posterior tibial artery should be wounded just below the middle of the leg, where it is deeply covered by muscle, it should be cut down upon higher up, and secured. Mr. Hey sawed through the fibula to get at the posterior tibial from the outer part of the leg; but I should recommend it to be secured from the inner side of the leg by making an incision between the gastrocnemii and the tibia, and then cutting through the fascia covering the deep muscles.

I have only known one instance of the femoral artery being divided in compound fracture, and I thought it right to amputate immediately; the hemorrhage was but slight, but as the artery and vein were both torn through, I considered there was very little chance of saving the limb.

In two cases of division of the brachial artery by fracture, amputation became necessary. In one of these cases I amputated even whilst the gangrene, which had taken place in the lower part of the arm, was extending; but as this arose only from local injury, the patient did perfectly well.

I shall not have time to-day to go through the difficulties which yet remain to be described in the treatment of these accidents, and I shall therefore leave them until we next meet.

LECTURE LXXV.

Gentlemen, I shall now take the opportunity of concluding the subject of compound fractures; and shall therefore next speak of these accidents when extending into the *joints*.

If a compound fracture should extend into the *ankle joint*, that, of itself, would form no reason why amputation should be performed; but you should be guided principally by the nature of the injury, by the age, and also by the constitution of the patient. If the compound fracture extending into this joint be oblique, it will generally do well, provided care be taken to procure adhesion of the wound, which is best effected by applying lint dipped in blood to the lacerated integuments, and allowing it to remain there until it separates spontaneously. The

many-tailed bandage should be applied, and kept wet with a spirituous lotion, composed of sps. vini, ℥j. aquæ, ℥v. A splint should be applied on each side, padded with cushions so as to preserve the great toe in a line with the patella, as I before mentioned to you, which is a point you must attend to on these occasions. Place the leg on its side, in the semi-flexed position, so as to relax the muscles, and render the patient's position as easy as possible. The position, however, will require to be varied, according to the situation of the wound. But if the bone be comminuted, as well as broken into the joint, and if there be bleeding from any large vessel, it will be proper to amputate immediately; more especially if the patient be obliged to work hard for his support, for after recovery from comminution, the limb will bear but a slight degree of exertion.

But still, if the constitution be good, and the person be about the middle age, it is right to take away the small pieces of bone, heal the wound by adhesion, and produce anchylosis. In one case suppuration even followed, and the patient did perfectly well.

If a compound fracture extend into the *knee joint*, and the opening be large, it will be necessary to amputate, as the constitutional disturbance will be exceedingly great, and run the risk of destroying the patient. But if the opening be small, try to procure adhesion, and thus make it a simple wound. When the condyles of the femur are broken into the joint, the limb is to be placed on a pillow in the straight position, and evaporating lotions and leeches are to be used to subdue the inflammation and swelling which necessarily attend this accident. Supposing the external wound to have closed, you then apply pieces of pasteboard, moistened by being soaked in warm water, about sixteen inches long, and broad enough to reach under the joint, and have them confined by a roller. When these dry, you will find them exactly adapted to the shape of the joint, and afterwards retains their form, so as best to confine the bones. I prefer the straight position in these cases, because the tibia presses the extremity of the broken condyle into a line with that which is not injured.

Compound fractures of the *elbow joint* generally happen through the internal condyles of the os humeri, and the fracture takes an oblique direction into the joint. In the most severe accidents of this kind, the constitution is generally able to support them, if they be judiciously managed; I could mention to you several cases which would prove the success of the practice of effecting union by adhesion. A case now presents itself to my recollection, of which I will give you an outline.

I was called to this hospital, to see a brewer's servant who had a compound fracture of the elbow joint, from the dray passing over his arm, which had considerably comminuted the bones. I could pass my

finger readily into the joint, and feel the brachial artery pulsating on its fore part. Considering the violence done to the joint, and the constitution of the patient; and men in such employment, you know, are in the habit of drinking largely of porter and spirits, and therefore render their constitutions exceedingly irritable: I told him, that I feared there was scarcely any chance of his recovery unless he consented to have the limb removed; this he determined however not to submit to, and I therefore did all in my power to save both his life and his limb. The bones were easily replaced, and the parts were brought carefully together. The limb was laid upon a splint, a bandage was lightly applied, and the fore-arm was placed at right angles with the upper arm. The wound united without any untoward circumstances; and the only thing that happened, which appeared in the least to retard his recovery, was the formation of an abscess in his shoulder, which was opened, and immediately healed. The joint was not even completely anchylosed, for he retained sufficient motion to allow him to resume his former occupation.

If a contrary practice be adopted, if poultices, for example, be applied. the adhesive process is prevented, and suppuration produced, which puts life in danger, or renders amputation necessary. I will, whilst I think of it, give you the result of a case where this practice was followed.

A woman between fifty and sixty years of age was admitted into Guy's Hospital, with a wound of the elbow joint, and fracture of both the condyles of the os humeri. A poultice was directed to be applied, and fomentations ordered twice in the day. On the day following the accident, she had a considerable degree of fever. On the third day, the upper arm was exceedingly swollen, attended with a copious sanious discharge from the wound. On the fourth day, her strength was greatly reduced, and the wound had almost ceased to discharge, but the arm was very much swollen; and on the fifth day she died.

In all cases of this accident, the arm should be kept in the bent position; for as anchylosis in a greater or less degree will be the consequence, it is attended with much less inconvenience in this position than in any other. If the bones be very much comminuted and the wound large, all the detached portions of bone should be removed; but in old people, when much injury is done, there is often not sufficient strength to support the suppurative process, and amputation should be recommended. The edges of the wound should be kept together by placing a piece of lint dipped in blood over them, and a bandage lightly applied, wetted with spirits of wine and water. Even if it should suppurate, it will not be necessary to amputate, unless any thing particular should afterwards happen.

A compound fracture extending into the *wrist joint* is a very serious

accident when the radius is much comminuted, but it is an injury which does very well when the radius is broken without being much shattered. I saw a case of this injury in a patient in the country, where the man met with the accident by falling upon the back of his hand, and the ulna protruded an inch and a half through the integuments; the bone was immediately reduced and bandaged lightly; the wound healed by the adhesive process, and the man recovered the perfect use of the limb. I recollect another case of the same kind, which came under the care of Mr. Chandler, in the other hospital; I now forget in what manner the accident happened, but the ulna projected through the integuments at the back of the carpus, and a compound fracture of the radius, with great comminution of the bone, was produced. The ulna was first replaced, but immediately resumed its dislocated position on the back of the wrist, although it did not again protrude through the skin. The hand and fore-arm were placed in a poultice, and were ordered to be fomented twice in the day. A copious suppuration ensued, attended with violent constitutional irritation; and Mr. Chandler, in order to save the patient's life, after a lapse of several weeks, amputated the limb.

In a similar case, it would be proper, when torn pieces of bone can be felt at the extremities of the radius, that the wound should be enlarged for their removal; and instead of fomentations and poultices being used, that the wrist should be surrounded by lint dipped in the blood, and a roller loosely applied. The arm should be supported on a splint, so as to keep it perfectly free from motion; evaporating lotions should be applied; and the limb should not be disturbed unless the patient has symptoms of a suppurative process, when a small opening should be made in the bandage, to allow of the escape of pus, but still the bandages should be suffered to remain. The patient should be bled from the arm, if the inflammation and constitutional irritation be considerable, and leeches should be occasionally applied under these circumstances. The bowels should be kept gently open, but all active purging avoided. If the suppurative process have extended up the tendons of the fore-arm, it will be necessary to amputate. The operation should not be performed where the tendons are loose in the arm, but further up, in the muscular part of it; you would otherwise have a sloughy irritable stump.

Another untoward circumstance is *a high degree of inflammation* attacking the neighbouring parts. If the patient's general health be good, the inflammation will not extend beyond a few inches around the accident; but if the patient be irritable, and the injury, for example, be in the leg, the inflammation will extend along the course of the absorbents to the groin, and if there be effusion at the same time accompanying

this, it must be considered as an indication of great danger. Such appearances must not be treated very actively by depletion; apply leeches, fomentations also, and poultices, to the neighbourhood of the wound. Lotions also of the liquor ammoniæ acetatis, with rectified spirits of wine, should be applied to the inflammation on the limb, whilst the poultice is applied to the neighbourhood of the wound. At the same time opium should be given to allay the constitutional irritability, and a gentle diaphoresis promoted on the skin, by giving some saline medicines, as the liq. ammon. acet. These symptoms generally make their appearance in persons who have lived irregularly, either as regards their diet or their habits. Be very cautious about the administration of purgatives, as they disturb the patient very much; but if absolutely necessary, give an enema.

Another obstacle met with in the treatment of compound fracture is an excessive *spasmodic* action of the muscles. This action is sometimes so violent as to render all your attempts to overcome it absolutely nugatory. In one case it disturbed the limb so much as to render amputation necessary, and on dissection it was found that there was a piece of bone separated from the other parts, and locked between the extremities of the bone.

It is sometimes necessary to amputate from a *want of union* between the fractured ends of the bone; and on this subject I can furnish you with the knowledge of a circumstance that may be of the greatest importance in your future practice. You may recollect having seen me amputate, a short time since, the leg of a young woman in Dorcas' Ward, for a great deformity of the limb; it unfitted her for any of the active duties of life, and she therefore became desirous of having it removed. By some mismanagement or other the bone was fractured in the process of parturition, and although she is now about nineteen years of age, there has not been the least attempt made towards ossific union. The part where the fracture took place is as flexible as a joint, and I therefore wish to put you on your guard, so that you may be very careful to avoid so distressing an accident. I have met with other cases of a similar description, and therefore I am inclined to think that it is generally the result of fractures occurring at that period.

The ordinary treatment of these cases is, to bandage the limb firmly, buckle on a case of firm leather over the limb, and adjust carefully a splint on each side of it, so that no lateral motion may be allowed. If it should happen in the leg, let the patient walk as much as she can on crutches, and thus, by making pressure on the ends of the bone, bring on a sufficient degree of inflammation to throw out adhesive, and afterwards ossific matter. I believe non-union is sometimes the result of

continuing cold applications for too long a period to the part, thus checking that degree of inflammatory action which is absolutely necessary to bring about a restoration of the parts. But if properly managed it is generally unnecessary to amputate in this state of the parts. Mr. Aymesbury's splints will be found very useful in the treatment of such cases: they have been used at the other hospital frequently, and I believe have been successful in accomplishing the desired object.

It has been recommended to amputate parts which have been injured by compound fracture when *tetanus* makes its appearance. But I advise you never to do so, as in the cases in which I have seen the practice tried, I have not observed it successful. What I advise you rather to do is, to put some of the extract of opium, liquefied by the addition of a little water, into the wound: I have known this succeed when large doses of musk and opium had been taken without producing any effect.

When is the most proper time to Amputate in Compound Fractures, supposing the operation to be necessary?

All the circumstances before mentioned being taken into account, if it will be necessary to amputate in a few days after the accident, then the sooner it is done the better.

If you amputate at one hour after the accident, the patient will do better than if you leave it twelve hours. For this reason, if you amputate immediately, the constitution has but one shock to sustain, and in general rallies much better than when the amputation is delayed. But if you leave it eight or twelve hours, there is a great degree of irritation previously set up. The *loss of blood* is rather a favourable circumstance than otherwise, to precede the operation. The persons in whom these operations succeed the least are such as are loaded with adipose matter; if you leave the limb, the constitutional irritation runs so high that it generally destroys life, and if you amputate, they frequently die in twenty-four hours after the operation, from the constitution being unable to bear the shock which that operation produces. The cases of compound fracture admitted into these hospitals generally do well in the proportion of about three to four, which circumstance, I think, alone would furnish an incontrovertible proof of the superiority of the treatment by adhesion to that which was formerly employed.

LECTURE LXXVI.

ON SUPPURATION IN BONE.

GENTLEMEN—Abscesses are sometimes found between the periosteum and surface of the bone, at other times within its cancellated structure,

and, occasionally, but very rarely, between the lamina forming the shell of the bone.

When an abscess forms between the periosteum and surface of the bone, it possesses the common characters of the formation of matter: there is severe pain extending along the surface of the bone; this pain, though severe, is of an obtuse kind: it becomes worse at night, and produces an inequality on the surface of the bone. It is a long time, however, before the periosteum ulcerates; the skin presents a circumscribed blush; you may even feel a fluctuation for a long period before the abscess breaks. The matter is to be evacuated as soon as the redness and fluctuation are distinct; then place the periosteum as closely on the bone as you can, leaving a small opening for the discharge of the matter, and apply at the same time straps of adhesive plaster round the opening, to keep the periosteum in contact with the bone, and the probability is that the parts will unite by adhesion. But if the opening made by nature or by the surgeon be large, the bone is deprived of its supply of blood, the part exfoliates, and granulations afterwards shoot out.

The treatment to be further pursued is this: if the bone be much exposed and die, touch it with an acid that will decompose the phosphate of lime, and the cartilaginous part also, and for this purpose the *lotion of muriatic acid*, commencing with gtt. ji. to ℥i. of water, or the *lotion of nitric acid* gtt. ji. to ℥j. will be found the most useful. I think, however, that the diluted nitric acid is the best; it induces a healthy state of the bone, and of the other parts, and it is the application which I generally prefer. Sometimes acetic acid is used for this purpose.

When the granulations arise from either the medullary membrane, or from the periosteum, or the surface of the bone, cartilage is first deposited, and afterwards phosphate of lime.

When an abscess forms in the cancellated structure, a peculiar process takes place. The result of the pressure of the abscess is to cause an absorption of the cancellated structure, and in this way the space for the increase of the abscess continues to be enlarged. At the time that there is an inflammatory action existing in the medullary membrane, there is a corresponding degree of inflammation going on in the periosteum, which causes a bony crust to be deposited on the surface, which materially increases the size and strength of the bone. But upon that part of the bone least covered by skin and muscles there is an ulcerative process going on, which overcomes the deposit from the periosteum, and thus the matter is evacuated. In this way it often happens that there is little of the original bone left, but the weight of the body is

principally supported by the new shell of bone which is formed. But if the constitution be so enfeebled that it cannot deposit a sufficient quantity of bony matter externally, whilst the process of absorption is going on within, then the coats of the bone become so thin, that the bone either breaks, or cannot support the superincumbent pressure.

The best treatment to pursue in this stage of the disease, is to inject the interior of the bone with the muriatic or nitric acid lotions, the latter is preferable, and at the same time insist on the observance of rest. Support the strength of the constitution, and avoid all those causes which would produce irritation, either generally or locally.

Abscesses in the shell of the bone require to be treated in the same way, and their process of restoration occurs rather quicker than when the abscess is seated more internally.

The portions of bone thus deprived of their vitality must separate, and this exfoliation of bone is either external or internal. When the periosteum is separated to any extent from the surface of the bone, if it be immediately replaced, it will again unite, and no exfoliation will ensue. But if it be allowed to remain detached from the surface of the bone for twenty-four hours, it will not re-unite, the bone dies, and is ultimately separated. The dead portion appears at first white, but it soon becomes black from the hepatized ammonia formed during the putrefactive process.

The separation of the dead from the living portion of the bone is a tedious process, and is effected by the action of the absorbents on the surfaces of the living bone removing that part which is in absolute contact with the dead bone; a space is thus formed into which granulations can rise. When these granulations reach the dead bone, they also act on it, and therefore you find the surface rough and uneven which is in contact with them, whereas the external surface remains perfectly smooth.

The principles which are to guide you in the treatment are these:— quicken the progress of the granulations a little, and act chemically on the parts by the acids, and that acid which I have before named is the best. The quickest exfoliation of the tibia which I have ever known was accomplished in three months. Most generally, however, twelve months are necessary for this purpose, and it will very often require two years. But this depends very much on the activity of the constitution.

It is right, if we wish to diminish the size of the exfoliation, to bind it upon the granulations, which will absorb a part of it; according to experiments made by Sir Wm. Blizard on this subject.

Internal exfoliation is also a very singular process. A man who is losing two-thirds of his tibia is walking about during the period in

which it is separating. This process I have already described to you when speaking of medullary abscess. In the treatment of this disease, I should say much might be done to assist the efforts of nature. As soc as the bones become loosened, which you may easily know by passing probe into the wound, what I should advise you to do is this; take awa a portion of the new bone, so as to admit of your sawing the old bor into two portions, and then draw them out. After amputation in fu health there is often *necrosis* taking place on the end of the bone form ing the stump. It happens because the bone is exceedingly loade with phosphate of lime at the time of the operation; but if a man l previously reduced by disease, a thin shell of bone only remains, and th blood-vessels have a much more free action on the bone.

Exostosis is of two kinds, cartaliginous and fungous. The *cartila ginous* contains only a very small quantity of the phosphate of lime, and grows originally from the inner surface of the periosteum, and spiculæ of bone afterwards shoot into it. The *fungous* exostosis is rathe a nest of bone enveloping the fungus than constituting the fungus itself. It grows from the medullary membrane. In the treatment of the fun gous exostosis nothing can be done but to palliate; the growth wil proceed in spite of local and constitutional remedies. Where the exostosis are *cartilaginous*, growing from the periosteum, they cease to increase beyond a certain extent, and usually form at the insertion of tendons into bone, as at the insertion of the triceps abductor magnus. You should make an incision through the integuments, cut through the muscle in the direction of its fibres, and having reached the top of the exostosis, you find the knife easily sinks into it, from it being still partly cartilaginous. Then slit down the muscle on each side, and apply the circular saw, invented by Mr. Machim, which is worked by a winch in the handle. When the exostosis arises from the cancellated structure of the flat bones, an idea suggested itself to me that it might be removed in the following way; by making an incision through the periosteum covering the tumour, and then separate it further with the handle of the knife on each side, the exostosis is gradually discharged by a suppurative process. But do not attempt this where the exostosis is excessively large; but it may be done with safety if it be not more than three or four inches in circumference.

Mollites ossium is an affection of which we know very little. There appears to be a defect in the assimilating powers of the system, whereby the proper portion of phosphate of lime is not deposited; whereas in rickets, there is an excess of cartilaginous material. What is ofter called mollites ossium, is only rickets, and should be treated accordingly.

OF IMPOTENCE.

Although this affection has been arranged in the syllabus with the sequelæ of gonorrhœa, yet I consider it a point of importance for you to become acquainted with, and shall speak therefore of the causes usually producing it. There are several causes which produce a destruction of the virile power. These may sometimes be traced to a peculiar sluggishness of constitution, to a general torpor of the procreative system, on which the usually attractive animal affinities exert no influence. To such persons a Venus might display her charms, and on such her son might exhaust his quiver in vain. No genial spring is here, no blooming summer or fruitful autumn, but all is winter—a dreary, desolate, and barren winter—in which the springs of life are frozen up, and the animal propensities destroyed. Some men are so constituted that they may be said never to possess a venereal stimulus, and some of the other sex are equally frigid. I knew a person who remained unwarmed by the flame from the hymeneal altar for seven years, and who was incapable of performing the duties which devolved on him.

Gentlemen, it is likely you may hereafter be consulted on these subjects; but these are some of the arcana of the profession into which you will not readily be admitted. No, it is not until you have contended long with popular prejudices that you will be made acquainted with such important secrets. When forty years of practice, or perhaps more, shall have rolled over you, when you shall have the snow on the tops of the mountains, (here the esteemed professor, with great good humour, passed his hand through the white locks which grace a well-formed front), then it is, and not till then, that you will be required to give your opinion on such weighty matters! (A laugh). When consulted by persons about to enter the marriage state, you should ask, if they have any development of sexual power in the morning, and if they have, depend on it they will not be deficient in energy in the after part of the day. But, if otherwise, advise them by no means to marry.

Another cause which might produce the calamity we are now considering, an *excessive irritability* of the *vesiculæ seminales*, which produces a premature expulsion of the seminal fluid, and this is almost as bad as the former cause. Sometimes it is the result of debauchery, but most frequently it occurs in irritable and delicate young men; in such cases we have to support the constitution by a generous diet and bark, giving at the same time opium to allay the irritability. In addition to which let the person stand over a large pan of cold water, and dash it over the genitals two or three times in the day. Turpentine and rhubarb are sometimes given, but I am not sure that they do any good.

Another cause of impotence is, the frequency of nocturnal emissions, and this is most commonly the case with young people. It is frequently the effect of bad habits at school, and it occasions a great degree of anxiety. We must try to lessen this, by representing to the party, that it is an occurrence which frequently happens to persons in a state of health every nine days or a fortnight; although in the patient's case it may happen two or three times during the night. The treatment of this species will be very much as the preceding.

Sometimes it arises from a wasting of the testicle, or from an abscess of this gland producing absorption of its structure. The removal of one testicle does not destroy, neither does it seriously impair the generative power. The removal of both however, emasculates; there is an opinion to the contrary, but it is an erroneous one; this loss of power does not happen at once, the secretion of the semen continues for a short time, and the inclination and the power remain; but gradually the desire, and afterwards the power is extinguished.

Impotence sometimes arises from the testicles not having descended. Mr. Hunter has said, that the testicles, when confined in the abdomen, do not exercise their functions. This is the case when the testicle is pressed upon a congenital hernia, when in the inguinal canal. But in the case of an apprentice of mine, who shot himself because his testicles had not descended, the secretory ducts were found full of semen. Impotence sometimes arises from the state of mind, generally from too great an impetuosity and eagerness to cohabit. A gentleman, for example, is recently married, and if not able to perform his wishes—in two or three days he is very full of anxiety, and the imbecility is considered by him to be permanent. When consulted by such a person you must not try to laugh him out of it, but tell him that it is not uncommon, but that it is necessary that he should promise you to abstain from the attempt for three or four days, or until he has taken all the pills which you will give him. These may be made of some harmless material, and that, if he will observe what he has promised, he is sure to get quite well. He takes two or three pills, but the very promise he has made, and the impression made on his mind by the promise, induces him to do the very contrary, and it seldom happens that he can return with any complaint.

ON BURNS AND SCALDS.

Burns and scalds produce three different effects, vesication, desquamation, and gangrene. If called in when a *vesication* only is produced, there is no danger, although the vesicles be numerous and extensive. The object is to preserve them from bursting, and therefore do not open them on any account, but allow the serum to accumulate in them until

a new cuticle is produced; the serum escapes, and there is no further mischief. But if you open them, there is a constitutional effort produced, which is followed by considerable inflammation, and sometimes by suppuration, and the sufferings of the patient are very great. All you have to do is to apply evaporating lotions, as the camphorated spirits of wine, or spirits of wine and the *lotio alba*, to prevent the disposition which there is in the cuticle to break. A little opium should also be given to allay the irritability.

But when the *second effect* I have spoken of is produced, when the burn is severe enough to separate the cuticle from the surface of the body, the most violent symptoms arise; as when a person falls into boiling water or wort. The exposure of so large a quantity of cutis produces a great constitutional effort in the re-action that takes place; but sometimes a person dies from the shock made on the nervous system, without any re-action having taken place. A child spilt some tea, which ran over his chest and abdomen, and he died in three days; therefore, the desquamation of the cuticle is the worst form of injury, from leaving the cutis unprotected. The *spirits of turpentine* is the best application in this form of burn; as the object is to excite a speedy re-action; and if you apply evaporating lotions, re-action can never take place. *Lime-water* and *oil*, and *lime-water* and *milk*, have been commonly used; but the *spirits of turpentine* is the best application. Where the constitution is irritable, and it gives violent pain, dilute it with oil, or with the oil and lime-water, and I think it would then form a very good application. Give *opium* and *wine* as long as the chilly state continues; but as soon as the heat is developed, and the pulse has recovered its power, do not continue it any longer, but employ other means to reduce the inflammation when necessary. Turpentine does not succeed where the scald is produced by hydrogen, or carbonated hydrogen gas, so well in London as in the country.

The *third state* is where the life of the skin is destroyed to a great extent. There is no *immediate danger*, for the constitution does not suffer in the first instance. The danger is to be apprehended when the sphacelated part begins to separate. The absorbents act briskly, and a great discharge follows the separation of the part. Fomentations and poultices are most useful in these cases, as the turpentine cannot act on the dead surfaces. It is necessary to give wine and opium, as in the former case, during the chilly state. The treatment is just the same, indeed, as in a case of common gangrene; and toward the end, when the process of suppuration is commencing, you may give wine and opium, or ammonia, to support the constitution.

These cases produce the most remarkable deformities. These are not

unfrequently the result of the surgeon's treatment, as they occur in a great measure after the cicatrization has been completed. They are owing to the natural tendency which there is in the cicatrix to contract. The wounds often heal smoothly, but afterwards become puckered. These contractions are apt especially to occur in the neck, by which the skin is united to the chest; and if the arm be the burnt part, the fore-arm becomes united to the upper-arm. The fingers become united to each other, and the thumb is sometimes bent very much backwards. This contraction may be prevented in the arm by passing a splint behind the arm, and keeping the arm extended on it. The same rule should be attended to, if there be any danger of the thigh uniting to the abdomen. You should pass a splint behind the thigh, and keep the thigh extended on it, and the contraction will be prevented. But as to the neck, do all you can, by bending the head back, or to either side, yet the contractions will take place. When the cuticle is removed, and the cutis is in a granulating state, you may produce cuticle over it very quickly, by using the *acetate of zinc wash*, made by putting two grains of the sulphate of zinc to one ounce of the *liquor plumbi subacetatis dilutus*. This object is sometimes well accomplished by sprinkling the granulations with the oxide of zinc. But the lotion appears to me to be the best. Some lint should be dipped in the lotion, and laid on the wound; over this some folded linen should be placed, and over the whole a piece of oiled silk, to prevent evaporation.

*** *The practical hints and cautions to be found in these Discourses will be valued so long as Surgery shall be cultivated as a science. They are founded upon experience, and cannot be controverted.*

THE END.

PRINTED AT W. H. COX, 5, GREAT QUEEN STREET, LINCOLN'S INN FIELDS.